

Vol. 14, No. 6

JUNE, 1933

15 Cents a Copy



What Is The Future Of Grapefruit?

See Editorial Page

LIBRARY
FLORIDA EXPERIMENT STATION
GAINESVILLE, FLORIDA



ASSOCIATED PUBLICATIONS CORPORATION, TAMPA, FLORIDA, PROPRIETORS OF:
THE CITRUS INDUSTRY --- THE FISH AND OYSTER REPORTER --- BARTOW PRINTING CO.

LIBRARY FLA. AGRICULTURE EX. S.N.



The trademark that sets a
world's standard of fresh
fruit and vegetable values.

American Fruit Growers Inc.

Florida Division
Orlando, Florida



Publication office at Bartow, Florida. Executive and Editorial offices: 312-313 Wallace S. Bldg., Tampa, Florida. Entered as second class matter February 16th, 1920, at the post office at Tampa, Florida, under the act of March 3, 1879. Entered as second class matter June 19, 1933, at the post office at Bartow, Florida, under the act of March 3, 1879.

Cost, Yields, Receipts and Profits, Ten Groves, For 16 Years, 1916-17 to 1931-32 Inclusive

By J. E. TURLINGTON, Professor of Agricultural Economics and Extension Economist, College of Agriculture, University of Florida

Records of costs, yields, and receipts for 10 groves covering the crop seasons from 1916-17 to 1931-32 inclusive constitute the basis of this paper. The records for the first six years were secured by the Bureau of Agricultural Economics, in cooperation with the Florida College of Agriculture. All records since that time have been collected by representatives of the College of Agriculture*. The owners and operators of each of the groves kept records of receipts and expenditures. They cooperated in every way possible with the representatives of the College of Agriculture who secured the information from them. Yields and receipts were checked with packing house records in many cases where the growers failed to have details by kinds of fruit.

The same 10 groves are included for the 16 year period; but the acreage for five of these was increased since 1916-17 by a total of 149 acres. This increase was due to both addi-

tional planting and to purchase of nearby groves. The total acreage for the 10 groves increased from 477 acres in 1916-17 to 626 acres in 1931-32. These 10 groves undoubtedly rank well above the average of the groves of the state.

In order that certain comparisons may be made of the individual groves without revealing their identities, all costs and receipts have been converted to the per-acre and per-box basis.

Costs as used in this paper include all labor and supervision, hired or otherwise, use of work stock, power and equipment, fertilizer, bluestone, dust, spray and other materials, taxes, and any miscellaneous expenses chargeable to the grove.

Receipts were what the grower received for the fruit on the tree, after all picking, hauling, packing and marketing charges had been deducted.

The measure of profits used is returns on capital, the difference between receipts and costs. Interest—an important item of costs—has not been included as a cost in this paper because of the measure of profits selected and the great fluctuations in grove values. Wartime inflation, the

Florida "boom", the location of the grove with reference to highways and cities, the depression, the increased acreage of citrus coming into bearing and a number of other factors have had their influence on the value or price of groves during the 16 years.

Both yields and costs per acre of citrus increase with age of the trees up to maturity¹. Yields increase faster than costs. When adjustments are made for groves containing all or a part of their plantings of the younger ages, a decrease in the costs per box follows. Therefore, if we are to compare groves having any part of their planting of younger trees, it becomes necessary to apply an adjustment that will reduce them to a common age basis¹. We have endeavored to make an adjustment that would bring all young bearing trees up to age 15. All data given hereafter have been so adjusted unless otherwise specified.

(Continued on page 8.)

*In a thesis presented by G. C. Roberts to the Graduate Council of the University of Florida, June, 1932, may be found a large number of tabulations and observations covering the first 14 years.

¹ See Agricultural Economist, Vol. II, No. 9 a mimeographed publication of the Florida Agricultural Extension Service for a method of making age adjustments.

Losses From Rust Mite Attack Of Oranges

By W. W. YOTHERS, Entomologist, RALPH L. MILLER, Associate Entomologist, IONE POPE BASSET, Senior Scientific Aid Bureau of Entomology, United States Department of Agriculture, Orlando, Florida

The comparative merit of bright and russet oranges seems to be a matter of endless controversy. This was particularly brought out by the remarks of many visitors to our exhibit at the Central Florida Exposition in Orlando in February. Some of these remarks were almost acrimonious in favor of russet fruit.

Our attention has recently been called to the shrinkage of russet oranges after their removal from the tree and also after being packed and placed in the precoolers. This seemed to be an unexplainable condition to many people connected with the picking and packing of the fruit. We have visited several groves and examined the fruit, and it is very apparent to us that the trouble is due entirely to rust mite attack on a considerable percentage of the fruit.

One of the greatest losses attributable to rust mite attack is due to the excessive rate of evaporation from russet fruit. This difference in loss of weight by evaporation from russet and bright fruit was called to the attention of the citrus growers many years ago. We did the first work in 1915, the results (published in bulletin No. 614, U. S. Department of Agriculture) showing that the loss of weight from russet fruit by evaporation was much greater than from bright fruit from adjoining trees.

In the spring of 1927 we carried on further work with thin-skinned Indian River oranges. This work was done by Mr. O. C. McBride and the senior author, and was reported in THE CITRUS INDUSTRY of October, 1927. Owing to the importance of these results, we are quoting from that article.

"All the fruit weighed were from the same tree.

"Percentage Loss In Weight

1-50	51-100
%	%

Brights Russet Russet

	%	%	%
1. <i>Chlorophyll a</i>	1.2	1.5	1.8
2. <i>Chlorophyll b</i>	0.8	1.0	1.2
3. <i>Chlorophyll c</i>	0.5	0.6	0.7
4. <i>Chlorophyll d</i>	0.3	0.4	0.5
5. <i>Chlorophyll e</i>	0.2	0.3	0.4
6. <i>Chlorophyll f</i>	0.1	0.2	0.3
7. <i>Chlorophyll g</i>	0.1	0.2	0.3
8. <i>Chlorophyll h</i>	0.1	0.2	0.3
9. <i>Chlorophyll i</i>	0.1	0.2	0.3
10. <i>Chlorophyll j</i>	0.1	0.2	0.3
11. <i>Chlorophyll k</i>	0.1	0.2	0.3
12. <i>Chlorophyll l</i>	0.1	0.2	0.3
13. <i>Chlorophyll m</i>	0.1	0.2	0.3
14. <i>Chlorophyll n</i>	0.1	0.2	0.3
15. <i>Chlorophyll o</i>	0.1	0.2	0.3
16. <i>Chlorophyll p</i>	0.1	0.2	0.3
17. <i>Chlorophyll q</i>	0.1	0.2	0.3
18. <i>Chlorophyll r</i>	0.1	0.2	0.3
19. <i>Chlorophyll s</i>	0.1	0.2	0.3
20. <i>Chlorophyll t</i>	0.1	0.2	0.3
21. <i>Chlorophyll u</i>	0.1	0.2	0.3
22. <i>Chlorophyll v</i>	0.1	0.2	0.3
23. <i>Chlorophyll w</i>	0.1	0.2	0.3
24. <i>Chlorophyll x</i>	0.1	0.2	0.3
25. <i>Chlorophyll y</i>	0.1	0.2	0.3
26. <i>Chlorophyll z</i>	0.1	0.2	0.3
27. <i>Chlorophyll aa</i>	0.1	0.2	0.3
28. <i>Chlorophyll ab</i>	0.1	0.2	0.3
29. <i>Chlorophyll ac</i>	0.1	0.2	0.3
30. <i>Chlorophyll ad</i>	0.1	0.2	0.3
31. <i>Chlorophyll ae</i>	0.1	0.2	0.3
32. <i>Chlorophyll af</i>	0.1	0.2	0.3
33. <i>Chlorophyll ag</i>	0.1	0.2	0.3
34. <i>Chlorophyll ah</i>	0.1	0.2	0.3
35. <i>Chlorophyll ai</i>	0.1	0.2	0.3
36. <i>Chlorophyll aj</i>	0.1	0.2	0.3
37. <i>Chlorophyll ak</i>	0.1	0.2	0.3
38. <i>Chlorophyll al</i>	0.1	0.2	0.3
39. <i>Chlorophyll am</i>	0.1	0.2	0.3
40. <i>Chlorophyll an</i>	0.1	0.2	0.3
41. <i>Chlorophyll ao</i>	0.1	0.2	0.3
42. <i>Chlorophyll ap</i>	0.1	0.2	0.3
43. <i>Chlorophyll aq</i>	0.1	0.2	0.3
44. <i>Chlorophyll ar</i>	0.1	0.2	0.3
45. <i>Chlorophyll as</i>	0.1	0.2	0.3
46. <i>Chlorophyll at</i>	0.1	0.2	0.3
47. <i>Chlorophyll au</i>	0.1	0.2	0.3
48. <i>Chlorophyll av</i>	0.1	0.2	0.3
49. <i>Chlorophyll aw</i>	0.1	0.2	0.3
50. <i>Chlorophyll ax</i>	0.1	0.2	0.3
51. <i>Chlorophyll ay</i>	0.1	0.2	0.3
52. <i>Chlorophyll az</i>	0.1	0.2	0.3
53. <i>Chlorophyll aza</i>	0.1	0.2	0.3
54. <i>Chlorophyll abz</i>	0.1	0.2	0.3
55. <i>Chlorophyll acz</i>	0.1	0.2	0.3
56. <i>Chlorophyll adz</i>	0.1	0.2	0.3
57. <i>Chlorophyll aez</i>	0.1	0.2	0.3
58. <i>Chlorophyll afz</i>	0.1	0.2	0.3
59. <i>Chlorophyll agz</i>	0.1	0.2	0.3
60. <i>Chlorophyll ahz</i>	0.1	0.2	0.3
61. <i>Chlorophyll aiz</i>	0.1	0.2	0.3
62. <i>Chlorophyll ajz</i>	0.1	0.2	0.3
63. <i>Chlorophyll akz</i>	0.1	0.2	0.3
64. <i>Chlorophyll alz</i>	0.1	0.2	0.3
65. <i>Chlorophyll amz</i>	0.1	0.2	0.3
66. <i>Chlorophyll anz</i>	0.1	0.2	0.3
67. <i>Chlorophyll aoz</i>	0.1	0.2	0.3
68. <i>Chlorophyll apz</i>	0.1	0.2	0.3
69. <i>Chlorophyll aqz</i>	0.1	0.2	0.3
70. <i>Chlorophyll arz</i>	0.1	0.2	0.3
71. <i>Chlorophyll asz</i>	0.1	0.2	0.3
72. <i>Chlorophyll atz</i>	0.1	0.2	0.3
73. <i>Chlorophyll auz</i>	0.1	0.2	0.3
74. <i>Chlorophyll avz</i>	0.1	0.2	0.3
75. <i>Chlorophyll awz</i>	0.1	0.2	0.3
76. <i>Chlorophyll axz</i>	0.1	0.2	0.3
77.			

	70	70	70
Loss after 10 days	2.20	5.79	6.14

Loss after 20 days	5.56	11.02	12.41
--------------------	------	-------	-------

Loss after 30 days	9.76	14.54	19.22
--------------------	------	-------	-------

Ave. weight of bright fruit 181.-
3082 gms.

Ave. weight of 1-50% rusty fruit
171.6182 gms. 4.8% less than brights.

Ave. weight of 51-100% rusty fruit
153.05 gms. 15.6% less than brights.

"The fruit that was from 1 to 50% russet lost much more in proportion than the fruit that was classed as from 51 to 100% russet. The average weight of the fruit should be noted. If the loss from rust mite injury, while the fruit is still on the tree, is combined with the loss from evaporation for 30 days after it has been picked the results are most striking. The brights lost 9.76%; those with 1 to 50%, 19.3%; and the russets 51 to 100%, 34.82%."

In the spring of 1933, in order to get further data on this important series of tests. The fruit was carefully examined for mechanical defects and was kept at room temperature. For the first test 45 of the very brightest oranges possible, from sprayed plots, were taken and compared with 45 black russet fruits from unsprayed plots. For the second series, 150 fruits were selected, which were equally divided into three classes—brights, commercial russets, and black russets. It was impossible to get really golden russets from the grove. The fruit was weighed every five days. The results of these two series of experiments are given in the following table.

days the russet fruit lost 2.2 times as much as the bright, while after the twenty-five days the loss was 1.45 times as much. In the second series the black russet fruit lost 2.5 times as much as the bright fruit during the first five days, while after twenty-five days the loss was 1.7 times as much. Generally, it may be said that the russet fruit lost about twice as much from evaporation as the bright fruit during the first fifteen days. Although the commercial russets in the second experiment were not so seriously injured as the black russets, the loss by evaporation was between that of the brights and the black russets, showing that the evaporation was in proportion to the seriousness of the injury.

The black russet fruit became wrinkled at the stem end during the first few days, and after a week or so it appeared almost mummified. It also became darker in color and appeared aged.

It is generally known that russet fruits are much smaller than bright fruits. The russet fruit in the first test averaged 12.4 per cent smaller than the bright, and the commercial russet fruit in the second test was exactly 12.4 per cent smaller. The black russet fruit in the second series was 21.1 per cent smaller than the bright fruit.

The black russet fruit of the two

TABLE 1—Loss weight from bright and russet oranges.
Series No. 1

	Average Wt.	After 5 days	After 10 days	After 15 days	After 20 days	After 25 days
	Gm.			Per cent		
Bright	206.5	2.71	5.0	7.4	9.8	11.7
Black russet	190.9	6.0	10.5	13.1	15.6	17.0
		Series 2				
Bright	219.96	2.49	4.59	6.3	8.35	10.85
Commercial russet	192.6	4.67	8.31	12.5	14.5	17.1
Black russet	163.43	6.25	10.86	14.5	16.7	18.5

The black russet fruit in the first series lost weight much faster than the bright fruit. During the first five

Florida Soil And Fertilization Problems

By ROBERT P. THORNTON, Consulting Chemist, Florida Agricultural Research Institute

The many and varied soil types, varieties of crops, and almost innumerable fertilization variables with which the grower in Florida has to contend, seem to make it highly essential that definite programs covering the at least general, classifications of each of these problems be worked out and presented in order that growers might uniformly follow what has been determined as most productive practice. This is the primary work to which the Florida Agricultural Research Institute expects to devote its main interest and hopes to eventually solve for the benefit of the Agricultural interests of the State. It is impossible within the brief time allotted for this paper to do more than outline some of the principal problems and discuss them very briefly.

It is generally known that Florida soils are almost unlimited in type and characteristics and that they are generally classed as thin and non-fertile within themselves, and as a rule decidedly deficient in plant foods—especially the secondary plant foods and rare elements which are known to be absolutely necessary for agricultural production. Further, the facts that under our semi-tropical climatic conditions, oxidation and decomposition of organic matter proceeds at an extremely rapid rate, that our soils as a rule do not have a more or less impervious subsoil for retention of plant foods, making leaching and loss of plant foods a matter of primary concern, leads to the necessity for the use of a fertilization program involving an expense, quality, and range of composition, which probably applies to no other section.

The facts brought out in the above paragraph, and primarily the fact that the greater percentage of our soils have very slight buffer capacity, develop the fact that our soils are extremely sensitive to any type of unbalanced fertilizer applications, and are extremely sensitive to any type of supplementary treatments involving a material or materials of a limited range of composition. As a result it seems from observation that the majority of our conditions of poor production may be laid to un-

balanced assimilation of plant foods, resulting in toxic effects and malnutrition upon the plants. This paragraph refers not only to the three primary plant foods, but to the entire range of secondary plant foods and rare elements included in agricultural practice. Our soils range in pH value from extreme acidity on one side to extreme alkalinity on the other. The matter of developing fertilizer practice which would serve as the best corrective treatment for either extreme, as well as determining as far as possible the optimum pH value for soil types, crops, varieties, and root stock of Citrus trees, deserves intensive study and is of primary importance. A primary idea along this line is the determination of whether the solubility of the plant nutrients at certain points to the pH scale is of more importance than the effect of the pH value upon the biological activity of the soil.

It is known in a general way that different varieties of citrus trees have varied nutrition requirements both as to quantity and composition of fertilizers. This particular problem, however, is neither understood nor worked out to such a point that a known and uniform practice which might represent the highest point in profitable production is followed. The same thing applies to the varied nutritional requirements of the different Citrus root stocks.

Some work has been done upon supplementary use of the various so called rare elements and their application to Florida Agriculture. At the present time, however, it must be said that success along this line has been rather limited and is confined essentially to the use of Copper Sulphate for certain tree and plant conditions and for certain soil types, and to the successful use of Manganese Sulphate only upon the calcareous soil types. There are a few indications of very successful use of other so called rare elements, but at present time they could be called indications only. We know that these secondary plant foods and rare elements are essential and necessary for plant growth and that they are supplied to our soils in fertilizers, with the so-

called rare elements supplied principally from organic materials. The matter of using these so-called rare elements as supplementary applications seems to offer very great possibilities from the standpoint of large yields of high quality produce under certain conditions, and is a matter which seems important enough to warrant intensive study.

There is a great deal of interest at present in the use of Lime as a supplement in our fertilization programs. At the present time results from this practice have been favorable enough to show that Lime has a definite place in our program. We do not know definitely, however, either the best form of Lime to use, or a great deal about quantity for various conditions. As a result, a considerable number of unfavorable results have been noted from the use of Lime. It seems at the present time that Lime is a splendid means of controlling toxic absorption of other plant food elements in unbalanced soils or fertilization programs, but that excessive use of Lime results within itself in a toxic condition. It must also be recognized that Lime is a direct plant food, and as such is required in relatively large quantities by plants and trees. It is safe to say at this point that very little is definitely known about the long time effects of liberal applications of Lime, and that there is a possibility and probability that serious damage may result from unwise use of this material upon soils as sensitive to unbalancing as those found in Florida. A matter which has already been mentioned becomes of major importance in this paragraph—whether it is wise to apply Lime for the purpose of almost completely neutralizing soils, at the expense of solubility of soil nutrients. There is much evidence at present leading to the conclusion that Lime and all secondary plant food applications should be made from the viewpoint and practical application rate of supplying these secondaries at the rate needed rather than using the pH value as a scale. It is generally observed that treatments to correct low pH value have

(Continued on page 22.)

**COST, YIELDS, RECEIPTS
AND PROFITS, 10 GROVES
FOR 16 YEARS, 1916-17
TO 1931-32 INCLUSIVE**
(Continued from page 5.)

The average annual yield per acre of groves five years old and over was 202 boxes, and the cost \$178, or a cost per box of 88 cents. Adjusting the young bearing trees to age 15 resulted in increasing the average yield to 235 boxes, and costs to \$197 per acre; but reduced the costs per box to 84 cents. The average, costs, receipts and profits per acre (young bearing trees adjusted to age 15) are shown by seasons in Table I. During the later years of the study, there seemed to be a tendency for several of the groves to bear a heavy crop of grapefruit in years when the state's crop was short. This was especially noticeable in the season of 1929-30. Some of the operators believed it possible to so manage a grapefruit grove that large crops would be had during years when the state's crop was short, but I shall not discuss that point.

For the 10 groves, the average yield per acre ranged from 171 boxes in 1916-17 when a freeze in February injured a part of the fruit, to 333 boxes in 1929-30 when a number of these 10 groves had abnormally large grapefruit yields. The percent of the total production that was grapefruit was nearly twice as high in 1929-30 as in 1916-17.

Receipts per acre ranged from \$162 in 1928-29, to \$902 in 1918-19. Per-acre costs ranged from \$124 in 1916-17, to \$242 in 1929-30, with an average of \$197 per acre per annum for the 16 years. Per-box costs ranged from 72 cents in 1916-17, to \$1.00 in 1928-29.

The return on capital averaged \$271 per acre per year for the 16 years; but the range was from -\$60 per acre in 1928-29, to \$688 in 1918-19. The average per-acre return to capital for the first four years was about five times as much as for the

last four years. The receipts per box of fruit averaged about 2 1/2 times as high during the first four years as during the last four years. An average for the last four years showed about 12 percent higher yields and costs per acre than an average for the first four years.

In 1923-24, fertilizer amounted to approximately 30 percent of the total costs for the 10 groves; but in 1918-19 it was 49 percent. Fertilizer averaged 36.6 percent of the total costs for 16 years. In other words, the fertilizer costs per acre (adjusted to mature bearing age) averaged \$72 per acre per year.

Taxes averaged 10.2 percent of the total costs over the 16-year period, or approximately \$20 per acre of mature grove. Some city taxes are included because of the groves were within incorporated cities. The percent of total grove costs made up of taxes ranged from 5.1 percent in 1916-17, to 15.2 percent in 1924-25.

The relation of average yields per acre per year to costs, receipts, and other factors by groves, is shown in Table 2. The yields varied from 172 boxes per acre per season for one to 342 boxes for another. The costs varied from \$113 per acre per year to \$254 per acre for the same two groves respectively. The grove having the lowest yield and lowest costs per acre also had the lowest cost per box; while the grove with the highest per acre yields and costs was next to the lowest in costs per box.

TABLE II. RELATION OF YIELDS PER ACRE TO COSTS AND OTHER FACTORS* BY GROVES, 16-YEAR AVERAGE (1916-17 TO 1931-32)

Grove Number	Yield Boxes	Total Costs	Fertilizer Cost	Receipts	Returns on Capital	Price per Box	Costs per Box	Percent of Total Fruit Grapefruit
626	172	\$113	\$57	\$264	\$151	\$1.54	\$.63	60.1%
584	202	187	68	351	164	1.73	.93	46.3
660	214	183	67	470	287	2.19	.86	28.4
584	223	193	89	450	257	2.02	.87	29.7
582	229	195	96	584	389	2.55	.85	15.7
583	230	215	89	610	395	2.65	.93	13.0
589	234	207	67	311	104	1.33	.88	64.1
592	240	204	61	345	142	1.44	.85	63.9
581	306	231	103	718	487	2.34	.75	10.3
591	342	254	76	498	244	1.46	.74	66.0
Weighted Average	235	\$197	\$72	\$468	\$271	\$1.99	\$.84	37.4%

*Young bearing grove adjusted to age 15 for all factors.

Fertilizer costs ranged from \$57 per acre per year for one grove to

\$103 per acre per year for another. The weighted average annual cost of fertilizer was \$72 per acre.

A price index was figured for each by years. This was computed by dividing the total actual receipts from grapefruit, oranges and tangerines for the individual groves, by what the receipts would have been had each kind of fruit sold at average prices received by the 10 growers. Such an index revealed the fact that each grower received more than an average price for some seasons and less than an average price for other seasons. It also frequently happened that a grower received more than an average price for one or two kinds of fruit and less than average for another kind.

There were five groves that sold from 46.3 to 66 percent of their total volume as grapefruit. The return on capital for these groves averaged \$161 per acre per annum over the 16-year period. For the five groves with from 10.3 to 27.9 percent grapefruit, the return on capital averaged \$361 per acre per annum over the 16 years, which was \$200 more per acre than for the five groves with a high percentage of grapefruit. In the first group, grapefruit averaged 60.1 percent of the volume of all fruit sold, and returned 52.2 percent of the receipts. The average price of fruit sold per grove was \$1.50 per box. For the other five groves, grapefruit averaged 15.8 percent of the fruit sold, and re-

turned 10.9 percent of the receipts. The average price for all fruit for these five groves was \$2.35 per box or 77 cents per box higher than the price received by those with more grapefruit.

Fertilizer costs per acre were lower for those groves with the larger percentage of grapefruit, with one minor exception. The percent of the total costs chargeable to fertilizer was also lower on these groves except for the lowest total cost grove. On this grove, fertilizer reached the highest percent of the total cost for any of the 10 groves.

A possible factor entering into the

TABLE I. RELATION OF YIELDS PER ACRE* TO COSTS AND OTHER FACTORS BY YEARS FOR 10 GROVES, (1916-17 TO 1931-32)

Season	Boxes per Acre	Receipts per Acre	Cost per Acre	Returns on Capital	Receipts per Box	Cost per Box	Percent of Total Fruit Grapefruit
1916-17	171	\$318	\$124	\$194	\$1.86	\$.72	28.7
1917-18	210	654	153	501	3.11	.78	38.9
1918-19	273	902	214	888	3.30	.78	28.2
1919-20	249	689	238	451	2.77	.96	46.4
1920-21	235	481	209	272	2.05	.89	31.0
1921-22	221	615	219	405	2.78	.95	44.1
1922-23	271	447	213	234	1.65	.79	34.0
1923-24	239	341	187	154	1.47	.80	34.3
1924-25	183	512	172	340	2.73	.92	39.2
1925-26	196	439	187	252	2.24	.96	37.4
1926-27	231	400	207	193	1.73	.90	33.1
1927-28	232	761	200	561	3.28	.86	46.7
1928-29	223	162	222	-60	.73	1.00	26.4
1929-30	333	574	242	332	1.73	.73	53.2
1930-31	260	262	196	56	.98	.78	28.9
1931-32	199	189	158	31	.95	.79	44.1
Weighted Average	235	\$468	\$197	\$271	\$1.99	\$.84	37.4

*Young groves adjusted for acreage to age 15 for all factors.

causes of lower fertilizer costs per acre for the five groves having the highest percentages of grapefruit, compared with the five with the lowest percentage of grapefruit, was the fact that the latter group averaged more trees per acre. This probably had an effect on the receipts per acre also.

On each of the 10 groves, the total receipts for the 16-year period exceeded the total expenses. During the 16 years, there were 28 instances out of 160 (10 x 16) where costs for bearing groves (five years of age and older) were greater than receipts. Only one of the 10 groves showed receipts in excess of costs for each of the 16 years; three others for 15 years; two for 14 years; two for 13 years; one for 12 years; and one for 9 years. The number of groves with cost exceeding receipts, is shown by seasons in Table 3:

TABLE III. NUMBER OF GROVES WITH COSTS EXCEEDING RECEIPTS BY SEASONS (10 GROVES 1916-17 TO 1931-32)

Season	Groves with Costs exceeding Receipts
1916-17	6
1917-18	1
1918-19	1
1919-20	0
1920-21	1
1921-22	1
1922-23	1
1923-24	3
1924-25	1
1925-26	2
1926-27	1
1927-28	0
1928-29	6
1929-30	0
1930-31	2
1931-32	2

Prices of Fruit: The percentage variation in prices received by growers for Florida grapefruit and oranges, has been much greater than auction prices. This is illustrated by the fact that New York auction prices which are available for the last 13 years showed a range in price for grapefruit from \$2.55 in 1931-32 to \$4.93 in 1927-28, a difference of \$2.40 per box, or 95 percent. The average price received by the ten growers for grapefruit for the same period varied from 51 cents in 1930-31 to \$1.97 in 1927-28—a difference of \$1.46 per box, or 276 percent.

The 13-year average spread between prices received by these 10 growers for grapefruit on the tree and the auction price paid for all Florida grapefruit sold on the New York auction was \$2.56 per box. The spread was between \$2.00 and \$3.00 for 11 of the 13 years. In 1920-21, it was \$3.19, and in 1931-32 it was only \$1.84. In 1931-32, much grapefruit was shipped to New York by boat, and freight rates to eastern markets were reduced in February. Other studies* indicate that costs

from the tree to the car were approximately 22 cents per box less in 1931-32 than the average for the seasons 1924-25 and 1925-26.

A four season average 1928-29 to 1931-32 indicates that it required two or more boxes of oranges out of every three, and three or more boxes of grapefruit and of tangerines out of every four, to pay for charges between the tree and the New York auction. It seems necessary either that these charges must be reduced, or the prices to the growers raised in some other way if they are to remain in business.

The price received by these ten growers for grapefruit averaged about 14 cents per box more than that received by a larger number of growers. This larger number of growers represents from 100 to approximately 400 records for each of the years listed.

Average prices received by the 10 growers for oranges varied from 68 cents per box for the 1928-29 season, to \$4.32 for the season of 1927-28. This is a difference of \$3.64 received by the grower, or 535 percent. The New York auction price varied from \$3.27 per box in 1923-24, to \$6.24 in 1927-28 — a difference of \$2.97, or 91 percent.

The 13-year average spread between what these growers received per box for oranges and the New York auction price for Florida oranges was \$2.22. This 34 cents per box less than the spread for grapefruit. This difference of 34 cents may be attributed to the fact that the percentage of Valencias to total sales of Florida oranges, was about twice as high for the 10 groves as was the average for the state.

The larger number of groves show average receipts per box of oranges for 14 years to be 47 cents less than for the 10 groves, thus making a spread for the larger number of groves of \$2.69 per box. Taking the larger number of groves, the spread for oranges between grower prices and New York auction prices for Florida fruit during the last 13 years has averaged close to \$2.60 per box.

We do not have data to answer the question of differences between average size, grade and quality of fruit sold at auction and the entire Florida crop. Therefore, this apparent spread may not be the actual spread, but it is not likely that it misses it greatly.

There is little if any indication

that the spread between grove prices and New York auction prices is influenced by the size of the crop marketed. It is not likely that it costs 1½ times as much to harvest, pack, transport and market a 24,000,000 box crop as it does a 16,000,000 box crop. The grower, however, suffers much more when the state's crop is large than when it is small.

The growers price for tangerines varied from 11 cents per box in 1930-31, to \$4.56 in 1927-28, and \$4.63 in 1919-20, a difference from the lowest price year to the highest price year of \$4.53, or 4109 percent. Auction prices for tangerines were not available.

Grower prices per box for the first four seasons of the 16 years in this study, averaged twice as much for grapefruit, 2.4 times as much for oranges and 4.7 times as much for tangerines, as during the last four seasons. When all fruit was included, the average price per box was 2½ times as high the first four seasons as for the last four. The general wholesale price level for all commodities averaged approximately 1½ times as high during the first four seasons as during the last four. It therefore seems that we must look elsewhere than to the general price level for a large part of this difference in prices between the early and later seasons. The greater part of the answer seems to be found in the increased production of Florida citrus.

When grower prices of fruit are sufficiently high for a period of years, it is not difficult for an average grower to make a profit. Plantings increase rapidly and per-acre grove values also increase. On the other hand, when grower prices remain sufficiently low to cause the average grower to run into the red for a few years, new plantings will probably not be sufficient to offset abandoned acreage.

During the early years of this study, grove plantings in the state were increasing rapidly. Full statistical information by years is not available on this point; but statistics compiled by the State Plant Board show that in 1919 there 11,356,414 citrus trees in the state. This number had increased to 16,677,227 by 1923, and to 22,026,714 by 1928, and to 24,323,850 by 1931. This is a total increase in 12 years of 114 percent. The increase in tangerine plantings from 1923 to 1928 was 165 percent. Orange trees increased during this same period 25 percent, and grapefruit 17 percent.

(Continued on page 20.)

*Experiment Station Bulletin 202 and unpublished data—Florida Experiment Station.

The Citrus Industry

with which is merged The Citrus Leaf

Exclusive publication of the Citrus Growers and Shippers

Publication office, 550 North Broadway, Bartow, Florida. Executive and editorial offices: 312-313 Wallace S. Building, Tampa, Florida. Address all communications to the Tampa office.

Telephone

4819

Published Monthly by
ASSOCIATED PUBLICATIONS CORPORATION
Tampa, Florida

S. L. FRISBIE	President
S. LLOYD FRISBIE	Secretary-Treasurer
FRANK KAY ANDERSON	Director
A. G. MANN	Production Manager

Subscription, \$1.00 per year in advance

NEW YORK OFFICE
115 East 28th Street
Edwin F. Ripley, Manager

CHICAGO REPRESENTATIVE:
Joe Esler, 5434 Glenwood Avenue
Telephone—Long Beach 3429

WHAT IS THE FUTURE OF GRAPEFRUIT?

Many owners of grapefruit groves are asking themselves what they may expect in the way of financial returns from their groves in the years to come. The answer lies largely with the growers themselves.

Florida with a trifle more than 100,000 acres of grapefruit groves, more than 90 per cent of which are in bearing, produces annually from 20,000 to 25,000 cars of grapefruit. Texas last season produced one-third that much and expects during the coming season to double its production. In another five years, if no unforeseen calamity should prevent, Texas will be producing almost as much as Florida is producing today. California and Arizona also are producers on a small scale, though not to an alarming extent.

What is to happen to the grapefruit market when the present production, already far in excess of the existing domestic demand, is doubled or more through the maturity of young groves?

A few years ago we were told that the canning of grapefruit hearts was to solve our marketing problem by increasing the popularity, and therefore the consumption of fresh grapefruit. There is no question that canned grapefruit has had the effect of introducing the use of grapefruit in quarters which heretofore had not been reckoned as consumers. The trouble is that it appears to have popularized canned fruit at the expense of the fresh article, and instead of being an asset to the grower and shipper of fresh fruit it has become rather a liability.

What, then, is the answer?

It appears to us that there are just two things that the growers and shippers of grapefruit can do to protect their markets and their investment in groves. The first of these is, of course, to produce the very best quality of fruit possible and to see that no off-grade fruit gets onto the market; the second is, to use every possible effort to increase the demand, both domestic and foreign, for grapefruit.

The first of these steps is primarily the concern of the grower. The second is jointly the concern of the grower and the shipper. The increased demand for grapefruit can be stimu-

lated only through publicity—paid publicity, and steps should be taken at once to inaugurate such an advertising campaign as will force the merits of grapefruit upon the minds of potential buyers.

Right along this line, and touching upon both steps outlined above, is the following from the Valley Farmer and South Texas Grower, published in the heart of the Texas citrus belt:

"There is a great struggle going on, although little is said about it, to capture the grapefruit market for next season. Of course it will end in all getting their patronage from the consuming centers of this country, but it is 'dog eat dog' and everybody for himself.

"It is rather amusing to the outsider to hear the claims of the respective regions. Florida boasts of its good grapefruit; Arizona exalts itself in talking of the 'superior quality of pomelos grown in the desert regions.' The lower Rio Grande Valley goes further in maintaining that the grapefruit grown in this extreme southern Texas country, in the semi-tropics, is the finest grapefruit in the world beyond peradventure of doubt.

"'Handsome is a handsome does,' says the buyer and most of them are 'from Missouri' when it comes to being shown. There is hardly any doubt that the average crop as grown in the Valley has a sweetness and flavor all its own, but not all we send out is the kind of fruit to brag about by any means, no more than is all the fruit shipped from other regions of 'superior quality' and appearance. There are many degrees of quality, and the grove owner who treats his trees as they should be treated in order to produce quality fruit is the one most likely to reap the benefits of early pools and discriminating demand.

"Per capita consumption must be very greatly increased through judicious advertising. We must actually do this, however, and quit talking about doing it.

"Texas has now about 14,400 acres of bearing and approximately 66,000 non-bearing acres of grapefruit. California and Arizona together have 13,677 bearing and 13,947 non-bearing acres of grapefruit. Florida has 93,602 acres bearing and 9,821 non-bearing acres.

"During the season of 1931-32 Florida shipped 21,628 carloads or 69.9% of that season's crop; Texas 7,303 cars, or 23.7%; California-Arizona 13.7%.

"With estimates ranging from 10,000 to 15,000 carloads of Texas fruit to be shipped next season the question is pertinent—'Have we found any new markets to absorb the increase?'"

As this Texas publication says: "We must actually do something, and stop talking about doing it." The owners of Florida grapefruit groves stand to be the heaviest losers if the grapefruit market "goes to pot." As such prospective losers, it behooves them to take the initiative in protecting their markets, their groves and their investments.

Florida Must Produce Quality Fruit

By JOE KNIGHT

Florida must produce quality fruit—the growers must improve their quality—raising absolutely first grade fruit, because the growers of Florida are not going to get anywhere until they do.

If it were possible for all the growers of our state to visit the New York auction markets, as I did last week, they should readily realize what the trouble with our fruit situation is. It should make a lasting impression, an indelible one, on every grower that could view our fruit as sent up there displayed for sale. Every citrus grower that possibly could should visit and go through the New York auction markets, where it is clearly demonstrated that the growers generally will never get any reasonable profit for our product until our main trouble is corrected—namely, to produce a first grade quality fruit and stop shipping all this miserable, practically unsellable fruit to markets. And then if they can't or won't realize the true situation, they will as a whole remain hopeless and it will simply have to continue as a situation of 'The Survival of the Fittest'.

There is no use of the grower saying that he cannot afford to raise better fruit. If he could view this fruit on display for sale in the market, he would readily realize that he can't afford not to produce good quality fruit. The auction companies are all our friends—they are our partners in the business—and want to get us every cent for our fruit that they possibly can. They want to keep the markets up—not down. It is to the advantage of all the big buyers to do this. It keeps the shyster buyer from getting a monopoly on the market. The buyers are stretching a point to pay all and every cent that they possibly can for our fruit; and considering the quality of the fruit and the kind of grade and pack that we generally persist in sending up there, they are paying us every cent, if not more, than our fruit is worth.

If it were not for the wonderful natural qualities—the juice content of our fruit, that the good Lord gave us, we would not even be able to compete with our great rival—California, at all. We would not be in her class, if we would continue to do as we are doing. It does no good and is perfectly ridiculous to send repre-

sentatives of the fruit growers and selling organizations of Florida up to the markets and advise the buyers they should give the growers more money for their fruit. The buyers don't understand that kind of language. They will have to buy our fruit at such a price as will enable them to sell it for a profit. Florida growers, as yet, are not supposed to be on the charity list. Talking, pitying ourselves, and asking more money for our fruit is silly. It's a waste of time. We will have to send the proper kind of a product first.

Good quality fruit delivered into the markets now would sell for a good price—netting the grower a reasonable profit. But most of the fruit being sent up to the markets does not deserve much of a profit. I wondered how some of the fruit displayed up there would sell at all. If I were a buyer I would not buy it. I would be afraid to take a chance on selling it. I saw fruit on display for sale packed under certain brands that was awful—fruit that was supposed to be graded as second grade, which fruit if ever run through our Elfers Packing House, would be thrown out as culls or fruit unfit to ship. These growers and packers shipping this poor grade of fruit may think they are fooling the buyers and jobbers. They most certainly are not. They are fooling themselves and at the same time are giving our State a black eye. The shippers of this miserable grade of fruit are a disgrace to the citrus industry and the state of Florida.

The buyers and jobbers all told me that they wanted good fruit—they are begging for it—but have to accept so much of this miserable low grade mess that so many of our shippers are sending up there day after day. When our fruit lands in the markets decayed, in poor condition, or poor quality the buyers all worry about this fruit more than we do at this end. The market wants good quality, uniformly graded and packed fruit and will pay every cent that it is worth. The trouble lies here in Florida and we will have to correct ourselves and our situation at this end.

In the auction rooms I saw some few lots of good quality, well graded fruit sell above the market and the buyers were begging for it—while

at the same time I saw car after car of poor grade and quality sell for a price to net the grower less than nothing. He would have been further ahead if he had not shipped this fruit at all. It wasn't wanted in the market. I didn't blame the buyers one bit. I would not have bought this fruit and paid anything for it either.

I think that I am correct when I say that there has not been a day during the shipping season but what there was some fruit of good quality of a well uniformed grade and pack that sold for over \$4.00 or \$5.00 per box. It is easy to sell fruit when the markets are high or in an abnormal condition—but to sell fruit now at this day and time for a profit, we will most certainly have to produce the real product—fruit of first grade quality.

It was shameful to view the California fruit on display and the contrast of this fruit as a whole compared with the Florida fruit was so great that every Florida grower should at least know about it, if it is not possible for him to view it. No, we can't produce the nice red color on our fruit that California naturally has, but it most certainly is possible to produce bright fruit and the natural juice content of our better grade of fruit and we might as well make up our minds to do it. Our first trouble to be corrected lies right in the grove. The grower himself must improve his quality. This is the first and main trouble. The next trouble lies in our packing houses, that is, in most of them; the grading and packing is poor. We will have to improve and perfect our packs to a good standard grade and pack and maintain this standard day after day. There is no use trying to ship any and all kinds of grades of fruit into the markets expecting the buyers to buy this fruit. We are only fooling ourselves and wasting time. They know the fruit as well as we do. They are familiar with all the grades of fruit shipped under our different brands. They are familiar with what good fruit under well established brands that we are sending up there and they are also just as familiar with the brands of our poor quality fruit being shipped up there. They will pay for the good quality and want it, but they will not pay any-

(Continued on page 16)

IMPRESSIONS

By Frank Kay Anderson

Over by the courthouse in Orlando and up drives Professor E. L. Lord of Gainesville; and there is Mrs. Lord in the car. Over at the Angebilt hotel a few minutes previously we had noted a large flock or covey of women milling about. Therefore when Mrs. Lord explains to us that his Nibs is arriving for the purpose of addressing the ladies of the Garden Club and that she is his official chaperone we are able to grasp the point, and to realize that Mrs. Lord is taking no chances. Women naturally are conservative; and we regard Mrs. Lord as ultra-conservative. We do not feel she'd have been taking much of a chance if she had remained at home in Gainesville.

Yet you never can tell. The homeliest printer that ever worked for us, so it turned out, had accumulated four wives without the formality of disposing of one in advance of taking on another. But he was the talkinest thing.

Then over on Orlando's Orange Avenue that evening in the midst of the bright lights, and here comes the well known H. Grady Zellner of Lakeland strongly chaperoned by none other than Mrs. H. Grady Zellner. This incident coupled with that of the Lords leaves us, as W. W. (Pete) Yothers would say, all bewildered. A week has passed before we write these lines but we haven't yet got it figured out.

From Tampa George R. McKean writes to say that our name at the head of these columns is superfluous, that any old head in citrus would place the authorship accurately without need for our name in print. That is kindly well meant, but George misses the point. Labeling this product as is done takes a load of liability off the shoulders of both S. L. Frisbie and S. Lloyd Frisbie; and incidentally gives them the benefit of a lower rate on the life and accident insurance they carry.

Certainly mighty good to hear from George McKean, and to learn that again his orbit will impinge

against our citrus circle. Back in the good old days when George was the "eye" of the old Buckeye Nurseries organization, and right bower for the late Myron Gillett, we used to consider George as possessing one of the brightest minds in citrus. And time has not altered that brilliance. We do not know precisely what are George McKean's plans, but we know there is room for him where he chooses to make it.

In a few previous marketing seasons Florida has scraped bottom. This year we found the hole in the bottom, and fell in. And that after something like three hundred years of experience. Back prior to 1890 they had a big, statewide meeting of growers in Orlando to discuss their then marketing troubles. We dimly recall, as a little kid, Granddaddy returning therefrom and telling the family about it. It took a whole day then to talk it out. Shucks, a couple of months talk wouldn't cover this past season's problems.

We have yet to encounter any grower who made any real money on this season's operations. After much search we have located one shipper who admits to having broken even. That is Henry Levy of Geneva, who recently has been operating a small plant and who during this season sold exclusively to trucks. Henry, we find, broke even because he didn't pay himself any salary, but donated his services to the business. That explains how he kept his house accounts out of the red ink. For both growers and packers to fail of making earnings is bad enough, but it also follows that both the wholesale and retail trade in the North have lost money on Florida citrus at the same time. In Andy Brown's language, Tha's ba-ad! It is nothing new, for in almost every low-priced season the dealers have lost money in handling citrus; and they have been exceedingly skittish and hard to handle for a time subsequent to those losses.

Our citrus salvation, we believe,

lies in an avoidance of egotism. In other words, we mustn't get the big-head and come to believe we have had all the trouble. From steel to silks this same time has been a period of nothing but trouble for all concerned. Folks who get big-headed and egotistical over their troubles do radical things when they try to remedy their situations; and hasty and radical measures do not get you anywhere. We find a lot of comfort in the fact that both average Florida growers and Florida shippers are showing a marked tendency to keep their feet upon the ground; and to grin, even though it is hard to distinguish some of those grins from the muscular contractions which accompany the act of weeping.

From Indianapolis a letter from that inspired Irishman Tom Connelly, who under the writing name of Con O. Lee used to contribute to the delinquency of that section of the Florida press in and around Tampa. Con, it appears, is organizing a European tour which leaving from Montreal June 30 will take you through the British Isles and over much of the Continent and return you to Quebec on August 17, all for \$613. Aside from possible pedestrian difficulties between Florida and these named Canadian ports, we can at this time think of only 611 other reasons for not personally accepting his invitation.

From Jacksonville a letter from our friend Frank E. Jennings, one-time candidate for Governor of Florida, soliciting our support for the Gulf-Atlantic ship canal project. "A Short Cut to Empire" the little booklet calls it. No, Frank. Sorry but we cannot help out. It would in truth mean a short cut to bankruptcy for Florida grapefruit growers, in our belief, with a corresponding boost for the Texas industry. We have a number of good friends in Texas and along the Gulf Coast country, but are not prepared to sacrifice our own Florida for their benefit.

The present opposition to this
(Continued on page 15)

NOW You Need Only Add
Water And To Mix

Improved

FICO-SULFUR



Everywhere growers are talking about the new Improved Fico-Sulfur for rust mite control, and giving it high praise. For years we have been making Fico-Sulfur and it has won high place in the regard of citrus growers, but practice makes perfect and now the Improved Fico-Sulfur is even better than before.

With it you obtain from ninety to one hundred twenty days protection from a single spraying, depending upon weather conditions. And it is wholly unnecessary to add a single ingredient except the required quantity of water. Fico-Sulfur does its own sticking, and sticks better and stays longer than any similar product with a "sticker" added.

trate or similar paste product possesses the same properties nor the same capacity. Give it one trial and obtain convincing proof of these assertions. Write us today, while you remember. Your problems are our problems. We have everything for complete pest control in grove or field under Florida conditions.

The purity and extreme fineness of its ingredients plus our exclusive process constitute the secret. No other semi-concen-

Florida Insecticide Co.
Apopka Florida

WHY There Are No Weed
Nor Grass Seeds In

Florida

PEAT HUMUS



The dredging method, as employed at our plant, is the only practical method for removing FLORIDA PEAT HUMUS from the deposit near Zellwood. A revolving blade cutter on the end of a shaft is forced into the deposit just under the top growth of vegetation.

During operation this cutter is moved to the right as far as the dredge can turn, and the peat cut from the deposit along with a large percentage of water is sucked thru the pump to the dredge discharge line. After the first cut to the right is completed, the top vegetation, in the form of "tussocks", floats away. The cutter then drops down a sufficient distance to make a cut towards the left. This is continued until a section is cut away to the depth of about 12 feet. The dredge is then moved forward and another section is cut and removed from the deposit.

The vegetation above the deposit of peat is composed of plants which live only under a partly submerged condition and which do not grow on the higher land. Should any seeds from these plants, or any of the plants, enter the suction line with the dredge peat humus, they will not germinate or propagate under high land growing conditions.

Florida Humus Company
Zellwood Florida

THE GROWERS' OWN PAGE

Solving Our Marketing Problems

Vero Beach, Florida.

Mr. S. L. Frisbie,
President—The Citrus Industry
Tampa, Florida.

My Dear Mr. Frisbie:

I have just read Mr. Donald J. Nicholson's article in the last issue of The Citrus Industry, and am so pleased with what he has said about marketing the citrus fruit of Florida; with your permission would like to lend my endorsement which is based on actual experience.

I came to Florida in 1916 direct from the large strawberry section of Southwest Missouri and Northwest Arkansas. There were around 40 growers' associations in this district organized for the purpose of being able to load car loads. All segregated, everything being consigned, each association manager shouting at the same high market quotations, resulting in bursting markets every day, and return from red ink to around \$1.25 per crate.

A cooperative was organized for the purpose of controlling distribution. A general manager and secretary were elected. I was the secretary. To facilitate proper distribution we found it necessary to develop more carload markets. A survey showed that many cities from 50 to 150 miles from the large distributing centers were using from 200 to 250 crates of our berries daily by express reshipped from the larger cities. It was decided that any town or city that used that many berries a day was a carload town as they were allowed to hold an iced car two days to unload, without demurrage charge. By shipping direct to these markets we saved the reshipping express charges, one commission, and the loss from deterioration naturally resulting from taking the berries out of iced cars and shipping by local express.

The first year after the entire district was organized we solved the question of distribution. The second year we went to an F.O.B. basis instead of consignment, at an average price at that time of \$2.25 for 24 quart crate instead of the ruinous returns we had been getting on consignments. As soon as we were in a

This department is devoted to the growers, for their use in giving expression to their views and a discussion of growers' problems. Any grower is welcome to make use of this department for the discussion of topics of interest. The only requirements are that the articles must be on some subject of general interest, must be reasonably short and must be free from personalities. The editor assumes no responsibility for views expressed, nor does publication imply endorsement of the conclusions presented.

position to say to the buyer that he would be protected and no car would be consigned to a competitor in his market from our district, the reliable commission firms were all ready to buy F.O.B. loading station.

In 1916 when I came to Florida the daily shipments were around 300 cars of citrus and I figured that if we could sell around 100 cars of perishable strawberries a day it would not be difficult matter with proper organization to sell 300 cars of citrus fruit a day, which is not unlike perishable. It would have been no big job then, if an organized effort with the will to do it had had the matter in hand. I discussed this at one of the first meetings of the Exchange that I attended, at which the general manager was present, but I scarcely received even a courteous recognition from him, for the reason, I thought at the time, the plan did not fit into the set up as then organized and which has been unsuccessfully followed since.

There are many cities in this country that are carload size, that have never received a car load of Florida oranges or grapefruit direct. This may be attributed to two causes: The allowing of the railroads to charge a local rate from the large distributing centers to points not covered in the through tariff rates, and the lack of proper effort to develop new markets.

Before buying power sufficient to take our annual crop either F.O.B., or on the trees, the possibilities of wider distribution must be made available, by the adoption of such tariff arrangements as will guarantee to the buyer or shipper a through minimum on cars whatever their destination may be.

Mr. Nicholson is very right in stressing the importance of producing good fruit—of good appearance and size. If we were on an F.O.B. or tree sale basis now it would be impossible to sell a large per cent of

the present crop at any price. If a grower is not in position to properly care for say ten acres, as an illustration, so as to produce marketable fruit, better to confine his efforts to five acres and raise fruit that will show him a profit.

In addition to the suggestions of Mr. Nicholson, in order to produce a marketable quantity of fruit, I believe that in case trees are two heavily loaded it would pay well to thin at the proper time as practiced by the deciduous fruit growers. If too heavy a crop is allowed to remain on the trees much of it will be too small to pack, besides it costs more to clip the fruit at packing time, haul it to the packing house to be culled out, than it would to thin in the early season of growth and let it drop on the ground. All fruits showing defects at the time of thinning could be removed. It simply means more boxes in the end because of increase in size and better grade of fruit and the trees are not overtaxed.

After all the most important thing the citrus industry of Florida can do is to put its house in order, so that when good fruit is produced it can be profitably marketed. Such order does not obtain now. It cannot be put in order without the will to do so, regardless of conflicting intents or selfish motives. Alibis, set up as a camouflage, for failure to render the service the growers rightfully expected, has too long been the practice.

I am not taking sides with either faction of the exchange nor criticizing any marketing agency individually, but one thing I do know, that success in selling our citrus crop either F.O.B. or on the tree can only be accompanied through a coordinated cooperation with authority centered in one place to fix prices and control distribution. I am convinced that this is true from twenty years experience in marketing cooperative work, from twelve years' service as a solicitor and buyer for one of the larger commission firms in this country, handling berries in car lots from Alvin, Texas, to Iowa, Peaches from Fort Valley, Georgia, to Michigan, potatoes from Arkansas to Michigan, during which time I bought and packed from 25000 to 50000 bushels of apples each year, in Arkansas, Missouri, Kansas, Nebraska, Iowa,

Michigan and New York. I know something of the buyers view point. Having always been a producer I ought to know something of the producers view point. During the time I was on the road I acquired a knowledge of railroad rates that enabled me to write the maximum fruit rate law of Missouri in 1907. The bill made a horizontal cut of an average of 37% of the then existing rate. It was attacked by the railroads but the Federal courts sustained the law and it became operative.

I trust the reader will pardon these personal references for I assure you they are not made with the spirit of bragadocio or "I told you so," but that you may know that I am speaking from experience as touching these matters.

Sincerely yours

GEO. T. TIPPIN.

IMPRESSIONS

(Continued from page 12)

cross-state canal proposal feels that by obtaining federal money for it Florida would, in a measure of speaking, be swapping its birthright for a mess of potato peelings. There is much quality, and some intelligence, in this opposition, but not nearly enough quantity to suit us. For our part we'd like to see a large, effective and militant group of grapefruit growers actively on the job. Failing that, we are likely to wake up some morning and find the R. F. C. corporation has made the money available, and that the peculiar resounding roar which woke us up was a horse-laugh coming from clear outside Florida.

Personal note to Charley Hunt, Lake Wales: Stop worrying about Jeff Thomas, in *The Grower*, outdistancing us through the quotation of so much poetry. Normally we are so full of our own output that we have small room for quotations. But when we quote we quote. We go right back to the ancient classics, and the quotations just pour out of us. Apropos of which:

"In hoc usufruct
Nux vomica est,
Sic semper gloria
Houseplant."

P.S. If that doesn't stop Jeff, we are going to ask Mrs. Thomas to exert her influence to keep him out of that public library.

"Got any beer?" That was the practically unanimous question for a certain length of time. But even within two weeks the public had

changed it to, "What kind of beer you got?" Which is something for the proponents of commodity advertising, as against brand advertising, to ponder over.

A chance meeting on the street in Orlando with W. R. Harney of Jacksonville, one among the few living pioneers of the fruit shipping business in Florida. For an ordinary business lifetime Mr. Harney was the "Co." of the old Chase & Co. He declined to leave Jacksonville when Chase & Co. moved their headquarters to Orlando a few years back, and relinquished his active participation in the affairs of that concern. Since then he and his nephew, Robert Morrow who will be remembered as long traffic manager for the old Chase & Co. organization, have been operating the Harney-Morrow Co., a wholesale fruit and vegetable concern which ranks among Jacksonville's largest.

It's a brag grove on the edge of Winter Park which W. R. Harney still owns in that section of the state, and he had been down to look it over. Willing to admit that it had been an awful shipping season, he was also willing to admit that in his long years of experience he had encountered worse ones. The absolute worst for his own affairs, he said, was that following the fruit fly eradication work. Now considering that Mr. Harney purchased his interest in the old Chase & Co. just about six months prior to the well known Big Freeze of '95, that was quite an admission.

That trio of the old Chase & Co., J. C. Chase, S. O. Chase and W. R. Harney, together with S. J. (Uncle Jeff) Sligh of S. J. Sligh & Co., Orlando, constitute a group of real pioneer shippers who are still living and active in citrus. If from among these Joshua C. Chase has been dubbed the Dean of the Industry, allowance must be made for the fact that he takes such a darned good photograph.

The following incident constitutes one of the queerest quirks of this shipping season. Shippers who bought oranges as low as forty cents per box in many instances lost plenty of money on those same purchases. Yet one shipper who paid \$1.35 per box for an entire large crop made some sweet money on that crop. It was this way: Three years ago he made a five-year contract for the crop from this particular grove at that figure. This season it looked as if he were

in for an expensive licking when time came to ship the fruit, for oranges generally speaking were not bringing freight and packing right at that time. It was fruit of excellent quality, however, and it proceeded to demonstrate that quality has its value, even in a year like this. Not only did the shipper get out alive, but to his own vast astonishment he made a good profit.

An interesting booklet from the pen of Mrs. J. M. Earley, Pittsburgh, of the organization of the American Fruit Growers Inc., entitled *How To Make Profits on Fresh Fruits and Vegetables* is just now being distributed to the retail grocery and fruit trade of the country. In addition to a considerable number of illustrations depicting actual fruit displays in an equal number of progressive stores there is a table giving the selling points, tips on how to cut down spoilage, special display suggestions, and points to watch in purchasing a list of fifty popularly used fruits and vegetables. One of the illustrated suggestions for displaying grapefruit appealed to us. It showed one whole grapefruit and another cut into halves, the cut halves being protected by cellophane. Giving prospective customers a look inside the fruit isn't a bad idea, particularly in a season when the exteriors may not be so appetizing.

A nice long visit with Earl Hunter, Ocoee, the veteran packing house man. A whole lot of interest to cover; and Earl is of the opinion the keeper element of the buying trade in the North now is on the alert to detect artificially colored fruit and inclined to discriminate against it. He told of noting in the New York market one day this past winter the buyers carefully examining the stem ends of the samples on display, and many removing the stems with a finger nail for closer inspection. That same day, he

FOR SALE

Lists of Florida Citrus Growers compiled from recent survey of groves, arranged by counties. Name, address, acreage and legal description.
Also list wealthy residents of Florida.

W. L. Lamar
P. O. Box 333
JACKSONVILLE, FLA.

reported, a car of inland oranges which had not been pre-colored, selling in a market of pre-colored fruit, was bid up to where it topped some fine looking Indian River fruit.

And a very short, sort of angel's visit, with another old timer, J. A. (Jim) Haistens of Cocoa, who came back this season to take the place of Frank P. Beatty during the latter's long convalescence from his automobile accident. The same old-reliable Jim Haistens, who doesn't talk much and looks too much like Will Rogers ever to win a beauty prize, but who sure does know how to make a packing house sing tunes of sweet melody.

Some folks in order to get a thrill sit up late at night reading murder mystery stories, but the J. R. Crenshaws of Orlando didn't have to do that. Along about the middle of the forenoon on each day for four days Mrs. Crenshaw discovered the gold fish bowl sitting upon the living room floor a yard or more away from the table where it customarily reposes and more than half emptied of water. The gold fish seemed undisturbed and happy and there was no sign of water having been spilled upon the living room rug. Mystery enough. Interrogation of the family revealed no knowledge of what had happened and only served to deepen the mystery. Now J. R. Crenshaw is a famous, if not to say notorious, fisherman (as are L. D. Aulds, E. D. Dow and the other traffic men of our citrus circles) and if Mrs. Crenshaw had asked us we'd have said he had been practicing casting; but she didn't ask us. Anyhow he wasn't at home on any of these days. This occurring four times in succession without a possible solution for the mystery being offered, Mrs. Crenshaw after breakfast on the fifth morning secreted herself where she could be out of sight and yet keep watch of the living room table. Along about mid-morning there was a tap-tap-tap on the front porch. It was the pet goat (pardon Florida mutton) belonging to little J. R. Hooking a horn into the grille upon the screen door he backed off, and thus opened the door. Forthwith he went to the living room table and upreared himself upon his hind legs. Then he proceeded to take a drink from the gold fish bowl. As the water fell lower and lower he forced his head down into the bowl until he could no longer reach the water. Then came the solving of the mystery. As the goatlet finished his drink and backed off the gold fish

Two Billion Dollars Made Available

For Farm Mortgage Loans

Authorization for Federal Land Banks to issue up to \$2,000,000,000 in bonds, with interest guaranteed by the United States, and either exchange the bonds for first mortgages on farms or sell them and use the money to make new loans to farmers, is one of the principal features of the farm mortgage section of the Agricultural Adjustment Act, according to information issued by the Farm Credit Administration, which administers this section of the Act.

The Farm Credit Administration began functioning on May 27 as provided for in President Roosevelt's Executive Order issued March 27, 1933. The agencies to be consolidated under the new Administration include the Federal Farm Board; the Federal Farm Loan Bureau which has jurisdiction over the Federal Land Banks, Joint Stock Land Banks and Intermediate Credit Banks; the regional agricultural credit corporation of the Reconstruction Finance Corporation, and the Crop Production Loan Division of the United States Department of Agriculture.

The farm mortgage section of the Farm Act makes it possible to lower the interest rates on both old and new loans, and to permit borrowers, generally, to extend payment on the principal of their loans from the Federal Land Banks, and to loan money directly to farmers in districts where

there are no National farm loan associations through which applications may be accepted. It also provides for Farm Loan Commissioner's loans to be made direct to farmers from agents of the Farm Loan Commissioner located in each of the 12 Federal Land Bank districts.

Applications for information or loans under the new Act, the Farm Credit Administration says, should be made of the secretary-treasurer of the National farm loan association in the county in which the applicant's farm is located, or to the Federal Land Bank serving his State. In the absence of a loan association, farmers should get in touch with their County Agricultural Agent.

The Federal Land Bank for this district is at Columbia, S. C.

The U. S. Bureau of Chemistry and Soils, from its compilation of information furnished by the manufacturers of cups, reports that a total of 11,088,333 cups were sold last winter for use in gathering the 1933-34 Naval Stores crop. Not since 1930-31 have anywhere nearly so many cups been sold in a season, the average sales for the two preceding seasons having been only slightly more than 2,000,000 cups. The average number of cups sold for the eight years, 1923-31, approximated 18,650,000 or 1,865 crops of new cups each season.

Mrs. Lehmann was speaking of a neighboring couple in Sanford and how affectionate they are. Said she: "He kisses her every time they meet. Why don't you try that."

"I don't know her well enough," protested Karl Lehmann.

**FLORIDA MUST PRODUCE
QUALITY F R U I T**
(Continued from page 11)

thing for the poor quality.

So, in a 'Couple of Nut Shells' as Amos and Andy say, if the growers of Florida will first attend to their groves, produce good quality fruit and the packing houses follow with a well perfected standard uniform grade and pack, we will have very little need to worry about our markets. And why the growers can't see this, and if they do, why in the name of common sense don't they correct themselves first, and stop finding fault with everything else?

Peculiar how one word in a bit of writing can so change its meaning. L. C. Beck of the Florida Humus Company at Zellwood climbs aboard us for saying last month that "including" the peat property Richard Whitney had four thousand acres at Zellwood for his game propagation. What was meant was "excluding," for there are some twenty thousand acres of the peat alone. And the sad part is we cannot blame the linotyper for that one.

The Case Against Arsenic

By C. R. Pilkington, American Fruit Growers Inc., Orlando

American Fruit Growers Inc. is very definitely opposed to any repeal of our Florida laws which now forbid the use of arsenical materials in citrus production, and which repeal would result in permitting the general use of such materials in the production of either grapefruit, tangerines or any other class of citrus fruit in Florida. This for the following three reasons in particular:

1. The general use of arsenical compounds for such purpose in citrus production is wrong in principle and as a production policy.

2. It would seriously threaten the market for Florida citrus fruit, and grapefruit in particular in the present instance.

3. It would threaten physical injury to grove properties and consequent injury to grove property values.

The recent proposal in the Florida legislature contemplated repeal of the restrictions against the use of these materials with respect to grapefruit and tangerines and not as to oranges. And the discussion has centered mainly around grapefruit. Consequently this present discussion relates particularly and most directly to grapefruit.

The general use of these materials in citrus production is wrong in principle and would be a mistake in production policy. Arsenic does not in fact promote the real maturity of citrus fruit. It does operate to prevent the natural development of citric acid in the fruit, which is one of the important factors that combine to give really attractive character to citrus fruit when it is naturally and fully matured. But in doing that it obviously only counterfeits a maturity that does not in fact exist, prevents the full development of the completely and really perfected product and tends to destroy the real character and quality which the fruit should have.

Some contend that it is possible to apply these materials to a grapefruit tree under skillful supervision without producing apparent physical injury to the fruit in the particular instance. Whether or not one accepts that possibility as true, it must be evident to everyone that it is one thing to argue the possibility of a process under expert or scientific con-

trol but an entirely different thing to urge the advisability of the general use of such a practice in an industry where it is perfectly obvious that the same expert supervision can not be expected to be applied. There can be no doubt whatever but that the general use of these materials in the production of Florida grapefruit or any other citrus fruit would result in excessive use in a large por-

portion of cases, whether intentional or unintentional, and it is freely admitted that excessive use seriously affects the quality of the product.

One can hardly conceive of a proposal that would threaten greater danger to our Florida grapefruit market. For years Florida grapefruit has rightfully enjoyed a valuable prestige in the markets of the country based

(Concluded on next page)

The mark of a Good Product

BROGDEX

REDUCES DECAY
RETARDS SHRINKAGE

The Brogdex trade mark on a box of fruit has come to mean a new standard of appearance and keeping ability. This reputation in the market has been established by a decade of performance. Buyers recognize the Brogdex advantages and are willing to pay more for them.

Appearance, better keeping qualities and being able to ship with less refrigeration are factors that greatly influence the grower's net return. Get these settled right and you will be surprised what a difference they will make in another season's operations.

There is a Brogdex packer near you—it is to his interest to get you more money for your fruit and he will do it, too, if you pack your fruit the Brogdex way.

Florida Brogdex Distributors

Inc.

B. C. Skinner, pres.

Dunedin, Florida

THE CASE AGAINST ARSENIC

(Continued from preceding page)

on a general recognition of actual superiority of Florida grapefruit as compared with grapefruit from competitive territories. If we destroy the fact of this superiority by injuring the characteristic qualities of Florida grapefruit through any such production program, the disastrous consequences to our market must be plain to everyone. And this particularly once the public becomes aware of the cause of this lowering of quality, and to which we may be very sure our competitive territories will not fail to give full publicity.

There is already a strong prejudice in the public mind everywhere against food products in connection with the production of which arsenical or other poisonous materials have been used. That prejudice can not be dispelled by explanation or theorizing as to the supposed harmlessness of the manner in which the materials were utilized. The public would not give its attention to scientific theorizing along that line.

We must also keep in mind the importance of the attitude of the medical profession toward our fruits. One of the most powerful factors in developing the general use of citrus fruits during recent years has been the active sponsorship of the use of these products by the medical profession. This actively favorable attitude of the profession in the past has been based upon the assumption of the use of fully and naturally matured fruit, and we could not ask nor expect the doctors of the country either to continue their active promotion of the use of fruits whose real maturity was counterfeited or by keeping silent to impliedly lend their approval thereto. The consequences of a reversal of the favorable attitude of the medical profession with respect to our Florida products would be disastrous.

These same aspects affect our export market, which during the past few years has developed into such an important outlet for Florida grapefruit that the attitude of foreign governments and our foreign trade in matters of this kind becomes of great consequence. There is ample reason to believe that the use of arsenical materials in our grapefruit production would result in distinctly unfavorable reactions from those quarters, as has happened in the case of some other lines of fruit in the past, with the result that shippers of those fruits, when intended for export to the foreign countries involved, are subjected under international agree-

THE CITRUS INDUSTRY

ment to the inconvenience and expense of first obtaining governmental inspection and official certification of their shipments by our government agencies, all of which complications and expense we certainly should avoid if possible.

Also, grapefruit in the production of which arsenic has been used appears to be unsatisfactory for canning purposes, both because of its undesirable effect on the stability of the tissue or meat of the fruit itself and particularly because of the lack of the normal and proper proportion of citric acid in such fruit. Such fruit requires a different canning process, with resultant poorer quality and flavor in the canned product. Consequently any general use of arsenic would immediately threaten our canning market for the fresh fruit and seriously affect the market for the canned product as well.

Statements are sometimes made that arsenic is used in California and Texas citrus production for similar purposes. Such statements are erroneous. But one thing we may be very sure of is that our competitive production territories will not fail to make full use of the market advantage which the adoption of any such practice on our part in Florida would unquestionably give them.

Some contend that use of these materials would lengthen the shipping season for our grapefruit. No consequential lengthening of the shipping season would in fact result. What likely would happen would be merely to vastly increase the quantity of grapefruit that we would find subject to possible shipment all at one time right at the opening of the season, with possible crowding into the early market and before the country was ready for it, of heretofore unheard of quantities of Florida grapefruit of at least doubtful eating quality, with resultant price demoralization right at the beginning of the season which probably could not be overcome throughout the entire year. Thus the very opposite of beneficial results hoped for would likely be brought about.

In addition to all the foregoing it is our belief that the use of these materials is detrimental to the trees themselves. Without elaborating on this particular aspect, it is certainly admitted that excessive use of arsenical materials promptly results in serious damage to a citrus grove. We are of the opinion that even when used in smaller quantities the effect is cumulative and after a time results in a lessening of vitality in the trees, the production of a dis-

June, 1933

proportionately large amount of small and inferior quality fruit and consequent general deterioration as a grove property with resultant depreciation in property value. The possible consequences of such results to the citrus industry in particular and to the state in general of course should not be ignored.

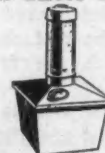
There are reasons against permitting the use of arsenical materials in citrus fruit production from the standpoint of principle, the inevitable consequences to our market, and otherwise. Much more might be said. But it is our conviction that if we remove these restrictions against the use of these materials there is every prospect that within a few years we shall find ourselves under the necessity of fighting hard to regain the market for our grapefruit which we shall have carelessly thrown away and that a large proportion of Florida grove properties will be in a more or less devitalized condition which may take them years to overcome, if ever.

While the recent proposal to repeal our arsenic law applied directly to grapefruit and tangerines, yet it is of almost equal consequence to orange growers because anything that seriously affects any phase of the citrus industry affects the entire industry as a whole and also because with the bars let down in any respect it is inevitable that use would be made of these materials by some on oranges also, with resultant demoralization in the orange situation.

We have been passing through what undoubtedly has been the most difficult operating season ever experienced in the Florida citrus industry.

(Continued on page 26)

The Improved
RIVERSIDE
Truck-Deciduous-
& Citrus Heater
It Kills Frost at little Cost



MILLIONS
Are in Use....

Write for
Descriptive Matter

RIVERSIDE SHEET METAL WORKS, INC.
RIVERSIDE, CALIFORNIA

D. V. Webb — Sales Agent
61 W. Jefferson St., Orlando, Florida
Stock of Heaters Now
On Hand at Orlando

Advances In Spraying Equipment

By CHAS. D. KIME, at Meeting Florida Horticultural Society

Spraying is again becoming a popular grove procedure, for which fact we can thank the Automotive industry. Yet with all of our progress the really difficult grove locations, when spraying is being done are still in test stage. The cost of the work as compared with the price of the resulting fruit crop will decide if our present equipment is good enough or too expensive to operate, and if it needs further development.

A good many of us remember the wheezy, vibrating, noisy outfits of 1912 which we called spray outfits. Surprising to say due to the effectiveness of the spray materials available even then, the old bamboo rod did effective work but it was slow, terribly slow and impossible to use because spraying only five acres was a lengthy chore.

Since 1912 we have seen intensely interesting mechanical developments. And while there is still much to be desired, machinery adaptable to grove work is vastly better suited to our needs today than even so short a time as three years ago. Although its use seems to be well within the range of allowable grove cost, we will have to admit that cost figures are not very plentiful. With increased production and only the better grades of fruit bringing a good profit spraying is no longer a luxury but a necessity. As one grower very emphatically told me, "It makes no difference what the cost is we have got to spray or quit growing fruit."

The hardest job of spraying in existence is right here in Florida. There are hundreds of acres, yes even thousands of acres of grove now in heavy bearing lying on one steep, sandy, curving hillside in Orange, Polk, Lake and other citrus growing sections, that must be sprayed two, three, and occasionally even four times per year. At least one of these applications is likely to be needed when the sand is dry and bottomless. Yet due to the extent of the acreage these hillsides must be negotiated by power-drawn equipment or left unsprayed. The bulk of our groves are only somewhat less difficult to spray than the above. All at some time are sandy and can be traversed by a tractor or truck only because we have paid special attention to tractive effort.

The development of better methods of securing traction in sandy go-

ing has made revival of spraying possible and is the most important factor in its revival it seems pertinent to see what has been accomplished along this line. To this day rubber tires are still special equipment in tractor catalogues or else are not offered at all, and trucks as an aid to grove work are an unknown quantity. I am still amazed at the lack of information on securing better traction in sandy soils.

Traction Tractors

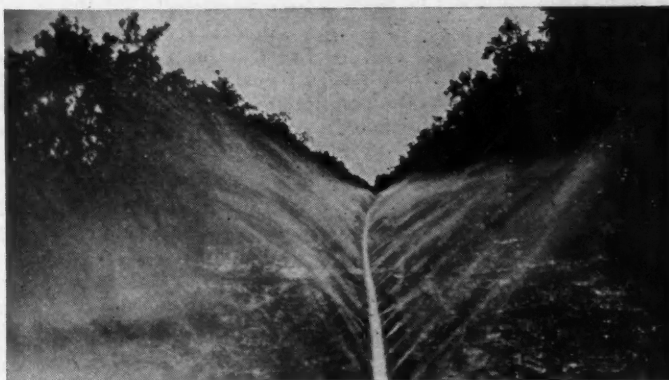
The use of discarded truck casings, such as the large 40x8 sizes, for securing greater pulling power apparently originated in Florida. The first of such assemblies of which I have any knowledge were built by Hoyle Pounds of Winter Garden. Their utility caused metal lugs to be entirely displaced so that today we see all makes of tractors equipped with either dual or triple casings per side. Metal wheels for driving work are

practically unknown and even the front steering wheels are being displaced by rubber tired equipment.

This past year two new types of driving casings have been tried extensively. They are "zero-pressure" casings with a metal ring at the tire beading vulcanized to the casing wall, and a low pressure balloon of large diameter running about 11.25"x24", and twelve pounds air pressure. This huge casing with its doughnut resemblance is a familiar sight to most of us.

The greater pulling power of this last addition to tractor equipment arises from the type of ground contact it secures in extremely sandy soils. It does have a large area in contact with the ground, about 115 square inches and because of the low pressure it tends to level out bumps and small ridges without having to lift the weight of the tractor in getting over

(Continued on Page 23.)



Ames pipe in service in Florida citrus grove

IRRIGATION SYSTEMS

Featuring Ames Lockseam Slip Joint Pipe above ground and Universal Cast Iron Pipe for main lines underground.



Complete service rendered in design and installation of irrigation systems of every description. We will gladly submit estimates without obligation to you.

THE CAMERON & BARKLEY COMPANY

TAMPA, FLORIDA

67 Years of Service

**COST, YIELDS, RECEIPTS
AND PROFITS, 10 GROVES
FOR 16 YEARS, 1916-17
TO 1931-32 INCLUSIVE**

(Continued from page 9.)

It has already been suggested that the number of boxes of Florida citrus produced, or rather offered on the market, seems to be the most important single factor affecting grower prices.

A mathematical calculation indicates that with the volume of grapefruit given, it would have been possible to determine within 25 cents per box of what the grower would receive in more than 2-3 of the cases. This indicates that for each increase of 1,000 cars of grapefruit shipped from Florida, the price to the grower decreased by 7.1 cents per box. The relatively high prices in 1927-28 may be partially accounted for by the fact that the U. S. crops of both citrus and of apples were very short.

Similar calculations were made for oranges and for all Florida citrus. The results show much the same thing as for grapefruit, i. e., the larger the crop the lower the price; but the correlations were not altogether as high as for grapefruit.

The general trend of citrus production in Florida has been up for some time, while the trend of prices has been down.

Summary

1. The average annual sales from the 10 groves was 235 boxes per acre, made up of 52 percent oranges, 37½ per cent grapefruit, and 10½ percent tangerines. (The young bearing grove has been adjusted to age 15 for all factors in the summary statements.)

2. The receipts averaged \$468, costs \$197 and returns on capital \$271 per acre per season.

3. Costs averaged 84 cents per box of fruit sold. Thirty-one cents of this was for fertilizer.

4. In general, groves with a high percentage of grapefruit were less profitable than those with a high percentage of oranges.

5. The returns on capital (the amount by which receipts exceeded costs) averaged five times as much for the first four years as for the last four.

6. Receipts per box of fruit sold averaged \$1.99, or \$1.29 for grapefruit, \$2.35 for oranges, and \$2.69 for tangerines.

7. Receipts per box of fruit sold averaged 2½ times as high during the first four as during the last four seasons. Grapefruit was twice as high, oranges 2.4 times as high, and tangerines 4.7 times as high on the

**Fertilizer Executive To Aid In
Administering New Farm Act**

In the appointment of Charles J. Brand as coadministrator of the new farm act, Secretary Wallace has obtained the services of an able assistant and one who thoroughly believes in the workability of the new law. No one has been more earnest in advocating equality for agriculture during the past 12 years than Mr. Brand.

Through arrangement between George N. Peek, administrator of the new farm act, Secretary Wallace, and officials of The National Fertilizer Association, the services of Mr. Brand have been loaned to the organization of the Agricultural Adjustment Administration, with the understanding that he will give only general supervision to the Association's work during that period. In announcing the appointment Mr. Peek stated, "At the request of Secretary Wallace and myself, the President has requested Mr. Charles J. Brand to act with me as coadministrator. Mr. Brand is recognized throughout the nation by farmers and the food and textile industries as one of our foremost authorities on the marketing of farm products."

Mr. Brand was born on a farm in Lac Qui Parle County, Minnesota. He graduated from the University of Minnesota in 1902 and entered the Government service in the Depart-

ment of Agriculture in 1903. In 1913 he was made chief of the newly created Bureau of Markets and built up an extensive marketing service that has been of tremendous value to farmers and to all agencies handling farm products. He led in the preparation of numerous laws relating to marketing and also greatly advanced the cause of cooperative marketing.

During the World War he served on various committees of the Council of National Defense and as chairman of the Committee on Cotton Distribution of the War Industries Board. In 1919 he resigned as chief of the Bureau of Markets to become vice-president and general manager of American Fruit Growers Inc., a large fruit and vegetable production and marketing enterprise. In 1922 he returned to the Department of Agriculture at the request of Secretary Henry C. Wallace and served for three years as consulting specialist in marketing. In 1925 he was elected executive secretary and treasurer of The National Fertilizer Association. During the past eight years he has been active in trade association affairs, both as a member of American Trade Association Executives and recently as president of the Washington Trade Association Executives.

**SUPPLY OF WHITEFLY
FUNGUS AVAILABLE AT
STATE PLANT BOARD**

Gainesville, Fla.—A supply of red aschersonia, the fungus so effective in the control of citrus whiteflies, is now available at the State Plant Board here.

The best time for introducing this

average for the first four seasons as for the last four.

8. An average of the last four seasons indicated that it required 2-3 of the oranges and ¼ of the grapefruit and tangerines to pay charges between the tree and the New York auction.

9. The percentage variation in prices received by growers was much greater from season to season than New York auction prices.

10. The most important single factor affecting prices received by these growers seems to have been the number of boxes of Florida fruit offered for sale.

fungus is just preceding, during or right after a rainy season, says Dr. E. W. Berger, entomologist with the State Plant Board. The period of summer rains he considers the best time.

A culture consists of the amount that can be grown in a pint wide-mouth bottle, and is sufficient for treating an acre of trees. To cover the expense of raising and distributing this fungus a charge of \$1 per culture is made. Checks should be made to the State Plant Board, Gainesville, Fla. Directions are sent with the culture, and more information is contained in Bulletin 67 by the Florida Agricultural Extension Service, Gainesville.

Pecan trees have given double yields in tests by the Florida Experiment Station where crotalaria was grown as a cover crop during the summer and Australian peas during the winter, compared with check plots on which no cover crops were grown.

Dr. Aurin Again Heads Citrus Clear- ing House Assn.

Dr. E. C. Aurin, of Ft. Ogden, was re-elected president of the Florida Citrus Growers Clearing House Association at the organization meeting of the new directors of the association. James C. Morton, of Auburn-dale, was re-elected vice president, and John D. Clark, Waverly, was elected secretary-treasurer, succeeding in this combined office L. P. Kirkland and M. O. Overstreet.

The new directors of the association, elected by the grower members early in April, assumed office for the coming season June 1, last week's session being the first meeting of the new board. The other members of the board are: J. C. Chase, Winter Park; Douglas Igou, Eustis; J. H. Letton, Valrico; M. O. Overstreet, Orlando; E. W. Vickers, Sebastian; N. H. Vissering, Babson Park; E. H. Williams, Crescent City; and R. B. Woolfolk, Orlando. Vissering and Igou are the new members on the board. Three members of the present board, President Aurin, Woolfolk and Chase, have served continuously as directors since the creation of the Clearing House five years ago.

Following the election of officers the directors appointed the new Operating Committee, the members of which had been nominated by shipper-members of the Clearing House at a meeting May 24. The members of the Operating Committee as approved and appointed by the board last week are as follows: J. R. Bynum, Ft. Myers; Randall Chase, Sanford; R. D. Keene, Eustis; L. P. Kirkland, Auburndale; G. Maxcy, Sebring; L. Maxcy, Frostproof; W. H. Mouser, Orlando; H. A. Ward, Winter Park; J. A. Watkins, Davenport; C. N. Williams, Orlando; and R. B. Woolfolk, Orlando.

Hearty endorsement was given to the citrus advertising bill which was introduced in both houses of the Legislature shortly before it adjourned, but which failed to be given consideration because of the rush of business confronting the Legislators during the last week of their session. The board decided to continue pressing the citrus advertising bill on the chance that a special session of the Legislature may be called.

The 1,400th consecutive daily Florida Farm Hour, 45-minute farm radio program sponsored by the Florida Agricultural Extension Service, will be presented from state radio station WRUF, Monday, June 19.

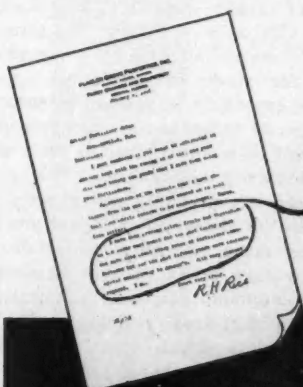
R. H. Rice tells: *His Experience*

Comparative Tests With Other Brands Prove the Superiority of Your Product



HERE IS A LETTER--an interesting and revealing one--from a consistent user of Armour's BIG CROP Fertilizers. The writer, Mr. R. H. Rice, heads the Flagler Grove Properties, Inc., Kendall, Florida. His company uses large quantities of fertilizer every year and, as he stated in his letter, years of experience have demonstrated to him the value of Armour's BIG CROP Brands. For the past fifteen years he has used Armour's BIG CROP Fertilizers exclusively.

Consider Mr. Rice's experience in making your own fertilizer selection this year. His statements are facts, not claims, as voiced by many of Florida's most successful growers. Such letters prove conclusively that these growers through use are convinced of the quality of Armour's BIG CROP Brands. They also prove that infinite care is exercised in the manufacture of these fertilizers and that the choicest of plant food materials, scientifically blended, are used in their manufacture. What Mr. Rice has to say about Armour's BIG CROP Fertilizers is evidence of this fact.



I have been growing citrus fruits and vegetables on the lower east coast for the past thirty years and have used about every brand of fertilizer manufactured, but for the past fifteen years have confined myself exclusively to Armour's BIG CROP Brands.

Armour's BIG CROP FERTILIZERS

CITRUS
GROWING IN
FLORIDA

If you have not already received a copy of our new "Citrus Booklet" write for a copy today.

ARMOUR FERTILIZER WORKS
JACKSONVILLE - FLORIDA

FLORIDA SOIL AND FERTILIZATION PROBLEMS

(Continued from page 7.)

produced favorable results principally in those cases where the treatment carries essential secondary plant foods, and have not been generally successful where alkaline materials carrying no essential secondaries have been used.

There is a large amount of work necessary to determine the best practice in regard to time of application and composition of fertilizers in relation to securing early size and early maturity upon those varieties of Citrus fruit whose primary value depends upon these two points. There is unquestionably a direct relation between time of application and composition of fertilizers in relation to the two points mentioned above. If they could be worked out and followed upon a known definite best schedule it will undoubtedly mean increased profits to Citrus growers.

Another problem which has received little attention but which seems to be one of primary importance is the relation of soil texture to profitable production. We undoubtedly have crops planted upon a great many soil types of such poor texture that it is impossible for the plant roots to properly absorb the plant nutrients. This brings up a great many agricultural problems which observation has shown can be improved only through supplementary applications designed to improve soil texture and soil physics.

It has not yet been definitely determined just what place the three general fertilizer classifications — namely; Physiologically Acid, Physiologically Neutral, and Physiologically Basic—have in our general agricultural practice, and in respect to special soil types. It is very probable that valuable information leading towards more economical and profitable production might be obtained by studies to develop the best use of these three fertilization types particularly in relation to Acid, Neutral and Alkaline Soils.

A very considerable amount of progress has been made within the last few years in the matter of fertilizer design. It has become rather general practice to approach this problem from the standpoint of the 100% composition of the finished goods, including a proper consideration of all the secondary plant foods and rare elements, instead of consideration of the primary plant foods only. A new and ever increasing fund of information covering the function and value of secondary plant foods and rare elements and their necessity

and relation to profitable agricultural production has definitely shown that this angle of compounding and blending proper fertilizers is in the majority of cases of as much or more importance than consideration of the three primary plant foods. Constant investigation and research in to the composition of the various fertilizer materials with respect to the percentage of secondaries and rare elements now permits improvements in quality of mixed fertilizers through selections of materials entering into fertilizers for specific crop and soil conditions far ahead of anything known a few years past. The potential benefits and profits expected to be gained from further research and practical application along this line seem to be vast. It seems safe to predict that, while State control laws now cover only Ammonia, Phosphoric Acid and Potash, the time is not far distant when this control will be extended to include a wide range of elements now receiving little consideration.

A study of Florida soil and fertilization problems would be incomplete without reference to fertilizer placement and its relation to profitable agricultural production. A considerable amount of information has been tabulated showing the extreme importance of placement in relation to quality and yield upon truck crops, and indications and observations lead to the conclusion that improper placement is costing the growers enormous sum of money annually. Placement upon Citrus has received less attention: there is undoubtedly a splendid field for study of placement upon Citrus especially in respect to securing special seasonal and crop responses, and in securing desired fruit sizes, maturity and quality.

There has probably never been a time in the history of the State when it was more necessary to produce high quality crops than at present. There is undoubtedly a direct relation between fertilizer practice and all those points which make what is called high quality in agricultural produce. It seems to be increasingly necessary to give careful thought and study to a fertilization program which will result in the most marketable quality and flavor.

We must realize that the problem of producing quality crops and maintaining soil fertility is becoming more and more difficult. This is due to a variety of reasons, chief among which are the facts that the extension of our agricultural program means a continual increased use of the less fertile soils and soils less suited to

production, that in a great many cases locations are selected with reference to geographical advantages rather than soil fertility, that continual removal and shipment of crops from our soil mean continual removal of all the nutrients, and that in a great many cases our fertilization practice is not such as to furnish a continual renewed supply of the elements that make and maintain soil fertility.

In conclusion the principal headings of the subject matter are tabulated as follows:

1. Discussion of Florida Soils in general.
2. Studies of Soil Types and pH ranges in relation to fertilization programs.
3. Studies of Fertilization programs and nutritional requirement of Citrus varieties and root stock.
4. Secondary plant foods and rare elements.
5. Relation of Lime to our Fertilization program.
6. Time of application and composition of fertilizers in relation to size and early maturity.
7. Soil texture and its relation to production.
8. Studies of Basic, Acid, and neutral fertilizer mixtures and their proper place in respect to soil types, pH range and seasonal applications.
9. Essentials of fertilizer mixture design.
10. Fertilizer placement.
11. Relation of fertilizer practice to flavor of Citrus fruit and vegetables and possibility of improvement of flavor through fertilization.
12. Reasons for ever increasing number of fertilization problems.

Volume exports of farm products in March had an index of 67 compared with 71 in February, and with 111 in March 1932, according to the Bureau of Agricultural Economics. This year's March index was the lowest for that month in nineteen years. Excluding cotton, the March index was 59.

J. F. AHERN

Consulting Engineer

Specializing In

Diesel, Electric and

Hydraulic Engineering

Phone 7-4755 2365 Post St.

Jacksonville, Florida

LOSSES FROM RUST MITE ATTACK OF ORANGES (Continued from page 6.)

fruit at the end of twenty-five days. If the loss from rust mite attack before picking is added to the additional loss by evaporation after picking, the total loss would be 18.13 per cent. If the fruit of the second series only is considered, the black russets lost 28.75 per cent more than the bright fruit.

It is a common belief, especially in the North, that russet oranges are sweeter than bright oranges. The information we have secured indicates that such is not the case. In every instance during the past fifteen years, analyses made by us showed that bright oranges were sweeter than russet oranges from the same grove and of the same degree of maturity. Analyses of the fruit used in the recent experiments, in terms of acid and solid contents, and their ratios, are given in table 2.

TABLE 2—Analysis of bright, commercial, russet and black russet Valencia oranges.

Bright—	Series No. 1				
	Time of picking	After 5 days	After 10 days	After 25 days	After 30 days
Acid	1.57	1.71	1.66	1.59	1.51
Solids	13.6	13.74	13.85	14.60	13.50
Ratio	8.6	8.05	8.35	9.20	9.00
Russet—					
Acid	1.8	2.15	2.27	1.81	1.74
Solids	13.35	14.75	14.65	14.30	13.50
Ratio	7.41	6.83	6.50	7.90	7.80

Bright—	Series No. 2		
	Time of picking	After 10 days	After 20 days
Acid	1.55	1.43	1.47
Solids	14.9	14.55	15.4
Ratio	9.6	10.28	10.45
Commercial russet—			
Acid	1.55	1.61	1.61
Solids	14.2	14.35	14.9
Ratio	9.15	8.90	9.26
Black russet—			
Acid	1.68	1.83	1.78
Solids	14.1	14.30	14.9
Ratio	8.4	7.80	8.38

It is evident that the rust mite so injured the fruit as to prevent proper maturity. In every one of the nineteen analyses the bright oranges have a higher ratio than the commercial russets and black russets. The com-

THE CITRUS INDUSTRY

mercial russets also have a higher ratio in every instance than the black russets.

In addition to the greater loss of weight from evaporation after picking of the russet fruit as compared with the bright fruit, and the excess of acid in the russet fruit, the russet fruits do not have the salability that the bright fruits have. The fruit attacked by rust mites is not only inferior from a food standpoint, but is also lacking in the decorative qualities of bright fruit.

ADVANCES IN SPRAY- ING EQUIPMENT (Continued from Page 19)

them. With this tire, weights are added to the wheels summing in many cases three to four hundred pounds total so as to give it better pulling power, when operating under maximum loads and in extremely hard going such as dry sandy hill-sides. In other words even the doughnut tire does not solve the problem but it is made extremely efficient, better than the discarded casing equipment or smaller wheel equipment, by the addition of weights to the wheels.

Such equipment would undoubtedly last a long time and may compare favorably with any other type when

sufficient comparative cost figures are available but whatever the cost it offers a chance to operate spray rigs of large capacity in groves that have here-to-fore been sprayed only with much trouble and expense. The super balloon or mounted air pressure casings cannot be expected to displace the use we are now making of discarded truck tires of the larger sizes as this source of equipment is low in cost, in maintenance and what is of more importance, furnishes effective power for extremely difficult grove work.

Grove Traction

Trucks of the latest dual or single wheel design are still "bogging-down" in our groves, under load or empty they cannot negotiate difficult going with ease. If this is the case we can hardly expect to load them with a four- or five-hundred gallon tank, a spray pump of 25 gallons capacity and expect to operate the pump from power take-off and at the same time travel the grove row by row, turning at the end of each row. This very set-up is being tried this year. It is the very last and hardest test for endurance and ability, and frankly such loads seem to be beyond the ability of this type of truck.

(Concluded Next Month)

JACKSONVILLE

GEORGE WASHINGTON

300 ROOMS - 300 BATHS
NEWEST AND FINEST
Every Known Facility - Garage Directly
Connecting Lobby - Radio

MAYFLOWER

300 ROOMS - 300 BATHS
A BEAUTIFUL HOTEL
Splendid Facilities - Garage - Radio
Coffee Shoppe

FLAGLER

MODERN AS THE BEST
FREE GARAGE

EVERY CONVENIENCE FOR SUMMER COMFORT
.. PRICES IN KEEPING WITH THE TIMES ..





ROBERT KLOEPPPEL - OWNER - DIRECTOR

John S. Taylor Heads Florida Citrus Exchange

John S. Taylor, Largo, elected Executive President of the Florida Citrus Exchange is a pioneer in the citrus industry being credited by the St. Petersburg Times as having "probably done more for the citrus industry in Pinellas county than any other man." Born near Largo, Mr. Taylor has spent all his life there and has been identified with the industry in a big way. His early shipping experiences go back to the day of the ox cart when the gulf schooner carried oranges in bags to Cedar Keys, Pensacola and Mobile.

One of the earliest packing plants was built by Senator Taylor in 1900. When the budding of grapefruit was started in Pinellas county Mr. Taylor was already a volume citrus producer and shipper. His business has grown and prospered since then and he has proven himself a friend of the grower through his continuous efforts as a state representative and senator to put through legislation for the benefit of the citrus industry throughout Florida.

Mr. Taylor has been a director in the Exchange eight years. "In ac-

cepting the presidency of the Citrus Exchange," Mr. Taylor said, "I am convinced that the Exchange has arrived at the time of its greatest service to the growers of the state. It has been my life-long experience that sensible cooperation can bring valuable results. So now, with the economy program of the Exchange, with the technical and practical experience of its officers and salesmen, with packing house efficiency, I think the Exchange is in a position to serve well and accomplish much for its grower members. Of course, the greater the harmony and coordinated effort within the organization and the more cooperation within the entire industry, the better will all of us be during the coming year.

"Much has been accomplished in the way of improved culture and production as well as packing. With improved buying power, 20 million American families will eat more citrus fruits and be willing to pay more for them. Orderly shipments from the State will do much to improve price conditions. To the solution of these problems, I expect to devote

my time, at the same time, inviting every factor of the industry to full and hearty cooperation."

Indicative of the problems confronting hog raisers are the following statements by the United States Department of Agriculture. Where the American farmer averaged 20 foreign customers for pork in the 1926-29 period, he had only eight left in 1932. And where he had 40 foreign customers for lard during this same pre-depression period, he had less than 30 in 1932. This loss of export trade in hogs has had a detrimental effect on domestic prices.

Hooked rugs were first made in this country by fishermen's wives who hooked rags into sail cloth as foundation material. Modern women, who want rugs for little money, also hook dyed rags into decorative and practical rugs for their floors.

A decline of nearly \$6,800,000,000 in gross farm income from 1929 to 1932, or about 57 percent, is estimated by the Bureau of Agricultural Economics, U. S. Department of Agriculture. Gross farm income last year was the lowest in 23 years of statistical records by the bureau.

Make Sure . . . Say "CHILEAN"

Action when you want it. Non-acid. It's Nature's own time-tested product. Safe and sure.

Insist upon Chilean—that's the sure way to get the genuine. Your dealer can supply both kinds—Champion and Old Style. Fine condition.

Lowest Price in its History!

CHILEAN NATURAL NITRATE

COLOR or BLANCH

MATURED FRUIT AND
VEGETABLES WITH

ETHYLENE



Every grower and shipper should have this FREE book which shows how Ethylene

1. INCREASES PROFITS
2. REDUCES LOSS
3. SAVES TIME
4. SAVES MONEY
5. IS NEITHER INJURIOUS NOR DANGEROUS
6. IS EASY TO USE

Buy from the largest supplier of
Ethylene to the citrus industry

CARBIDE AND CARBON CHEMICALS CORPORATION

30 East 42nd St., New York City

1310 Santee St., Los Angeles, Calif.

114 Sansome St., San Francisco, Calif.

Warehouses in Los Angeles, Tampa, Jacksonville,
and other principal cities

Units of Union Carbide **UCC** and Carbon Corporation

Floridan Awarded Welfare Medal For Plant Introductions

Recognizing his accomplishments in the development and promotion of agricultural exploration and the introduction of new and valuable plants into the United States, the Committee on the Marcellus Hartley Fund of the National Academy of Sciences has awarded its Public Welfare Medal to Dr. David Fairchild of the Division of Foreign Plant Introduction, Bureau of Plant Industry of the U. S. Department of Agriculture. The medal is given for "eminence in the application of science to the public welfare." Dr. Fairchild is widely known in Florida, and has his home in Miami.

Initiating the systematic and sustained foreign agricultural exploration and plant introduction work of the Department in 1897, Dr. Fairchild for several years devoted the greater part of his time and attention to the exploration phases of that work until 1906, when he was designated "In charge of the Office of Foreign Seed and Plant Introduction, in the Bureau of Plant Industry." This work he administered until 1928. Since 1928 he has been pursuing special studies in the same field.

The organization has gained recognition as the world's leading official agency for the introduction of new and valuable crops. Its plan of organization, methods and results have been made the objects of special study by foreign governments. Foreign plant introduction activities during the past thirty years contribute annually many millions of dollars in values and involve extensive areas of cereal and forage crops, new orchard fruits, vegetable and fiber plants, drug and oil plants and ornamental trees and shrubs. In the words of the Committee, the activities of Dr. Fairchild have added "to the wealth of the Nation through having opened new lines of profitable activity to American farmers."

The presentation of the medal will be made at the next Annual Meeting of the Academy.

The chinch bug on St. Augustine lawn grass is best controlled by dusting with finely ground tobacco which contains about 2 percent nicotine, says J. R. Watson of the Florida Experiment Station. It should be applied on a dry day and the lawn should not be sprinkled for several days.

THE CITRUS INDUSTRY

NEW HOME AGENT FOR EAST HILLSBORO NAMED

Plant City, Fla.—Miss Clarine Belcher has been appointed Home Demonstration Agent for the eastern part of Hillsborough County and will begin work here June 1. She succeeds Miss Motelle Madole, who recently married Klein H. Graham, Business Manager of the University of Florida.

Miss Belcher is a graduate of the Florida State College for Women.

Twenty-five

She has taught home economics at the Arcadia High School and at the Louisiana Polytechnic Institute, and has served as Home Demonstration Agent in Lee County, Florida.

Mrs. Graham had been in home demonstration work for nine years, serving eight of them here.

Mushrooms should not be gathered by persons who do not know the poisonous from the non-poisonous ones.

Higher Prices Forecast Will Mean

PREMIUM PRICES for QUALITY FRUIT and TRUCK CROPS

OPTIMISTIC forecasts of advancing prices in agricultural products re-emphasize the importance of a sound Summer fertilizing program.

During the next few months Nature will do the mechanical work of growing your crops. But Nature is concerned only with producing seed to perpetuate the plant. The problem of putting **QUALITY** into the crop is strictly up to you. Nature cares everything for reproduction; nothing for quality.

QUALITY is the result of fertilizing and care. To growers who see in the price advance forecasts an opportunity to wrest premium prices from the quality market, we recommend **NACO Brands** which contain Genuine **HUMBOLDT Guano**. . . Nature's Finest Fertilizer.

NITRATE AGENCIES COMPANY
1401-1407 LYNCH BUILDING
JACKSONVILLE, FLORIDA



Fertilizer Industry Planning Recovery Program

Since May 16 the fertilizer industry has been planning a program of cooperation with the Government under the provisions of the National Industrial Recovery Bill now under consideration in the Senate.

A special Fertilizer Recovery Committee, representative of the entire industry, has been organized and by vote of the Board of Directors has been made a standing committee of The National Fertilizer Association. The chairman of this committee is Horace Bowker, president of The American Agricultural Chemical Co., New York. The other members are: A. D. Strobhar, Southern Fertilizer & Chemical Co., Savannah, vice-chairman; C. T. Melvin, The Gulf Fertilizer Co., Tampa, secretary; R. P. Benedict, Darling & Co., Chicago; B. H. Brewster, jr., The Baugh & Sons Co., Baltimore; Bayless W. Haynes, Wilson & Toomer Fertilizer Co., Jacksonville; C. F. Hockley, The Davison Chemical Co., Baltimore; L. W. Rowell, Swift & Co., Chicago; John E. Sanford, Armour Fertilizer Works, Atlanta; and Wm. E. Valliant, Valliant Fertilizer Co., Baltimore.

This committee met for several days in Washington last week and are now holding regional meetings throughout the country to familiarize all members of the industry with the provisions of the recovery bill. Meanwhile a code of fair competition is being drafted which will be presented for adoption at the annual convention of the Association at White Sulphur Springs on June 20.

Charles J. Brand, executive secretary and treasurer of the Association has sent every fertilizer manufacturer in the United States a cordial invitation to join the industry's principal trade association, to attend the convention, and assist in planning the recovery program.

Crotalaria was planted on 68,000 acres last year compared with 5,000 acres in 1928. The nitrogen returned to the soil from last year's crop is estimated to be worth about \$340,000.

Outstanding 4-H club girls, 350 strong, spent last week on the campus of the Florida State College for Women at their annual short course held by the State Home Demonstration Department.

There are 380,060 acres in Florida planted to citrus, according to inspection figures of the State Plant Board. This represents an investment of about \$231,000,000.

American people are now eating around 8 percent more pork and lard per person than they did before the World War.

THE CASE AGAINST ARSENIC

(Continued from page 18)

try. This has been the result primarily of unprecedented general economic conditions and low purchasing power of the people, and has been particularly complicated from the marketing standpoint by reason of unusual irregularity in maturity and quality of our grapefruit this season on ac-

count of numerous blooming periods last spring and other conditions which have obtained. It is a natural tendency in the face of unusual conditions for some to urge as remedies courses of action which under normal circumstances could not obtain any substantial hearing, but it is extremely important that our citrus industry do not fall into such error in this connection.

This is one of the matters of paramount public interest which can not rightly be considered from any individual or selfish standpoint because the individual does not alone suffer the consequences of his acts but the action of every individual affects the interests of the whole, and the ultimate general good must be kept uppermost in our minds.

CLASSIFIED

Advertisements

The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion. Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

FANCY ABAKKA pineapple plants. R. A. Saeger. Ankona, Florida.

PUREBRED PULLETS FOR SALE—White Leghorns and Anconas ready to ship. Barred Rocks and R. I. Reds shortly. Several hundred yearling White Leghorn hens now laying 70%. Write or wire for prices. C. A. Norman, Dr. 1440, Knoxville, Tenn.

LAREDO SOY BEANS, considered free from nematode, excellent for hay and soil improvement. Write the Baldwin County Seed Growers Association, Loxley, Alabama, for prices.

WANTED—To hear from owner having good farm for sale. Cash price, particulars. John Black, Chippewa Falls, Wisconsin.

BUDDED trees new Florida commercial lemon, proven, thin skinned, juicy, scab immune. Also rough lemon, sour orange and Cleopatra seed and hlingout seedlings. DeSoto Nurseries, DeSoto City, Fla.

SEND no money. C. O. D. Cabbage, Onion and Collard plants. All varieties 500—60c; 1,000—95c; 5,000 and over 75c per 1,000. Standard Plant Co., Tifton, Ga.

C. O. D. Frostproof cabbage, onion and collard plants. All varieties 500—60c; 1,000—95c. Farmers Plant Co., Tifton, Ga.

DUSTER — Niagara, Air-Cooled engine Steel truck-mounted. Nearly new. Half price. Samuel Kidder, Monticello, Fla.

HIGH BLOOD PRESSURE easily, inexpensively overcome, without drugs. Send address. Dr. J. B. Stokes, Mohawk, Fla.

SEEDS—ROUGH LEMON, SOUR ORANGE, CLEOPATRA. Pure, fresh, good germination. Also seedlings lineup size. De Soto Nurseries, DeSoto City, Fla.

DETAILED SOIL Analysis, Interpretations. \$2.50. Soil Laboratory, Frostproof, Florida.

RAISE PIGEONS—Profit and pleasure. Illustrated descriptive catalogue postage six cents. Vrana Farms, Box 314a, Clayton, Missouri.

CROTALARIA SPECTABILIS—Seed for sale. New crop, well cured, bright and clean. Price 25c per pound in 100 pound lots and over, 30c per pound in less quantities. f. o. b. Hastings, Bunnell, Lowell and San Antonio, Florida. F. M. LEONARD & COMPANY, Hastings, Florida.

SCENIC HIGHWAY NURSERIES has a large stock of early and late grapefruit and oranges. One, two and three year buds. This nursery has been operated since 1883 by G. H. Gibbons, Waverly, Fla.

CABBAGE, Onion and Collard plants. All varieties now ready. Postpaid 500 for \$1.00; 1000 \$1.50. Expressed \$1.00 per 1,000; 5,000 and over 75c per 1,000. Satisfaction guaranteed. P. D. Fulwood, Tifton, Ga.

NEW COMMERCIAL lemon for Florida, the Perrine; proven. All residents need yard trees, keeping Florida money at home. Booking orders for budded stock for winter delivery. DeSoto Nurseries, DeSoto City, Fla.

WANTED—To hear from owner of land for sale. O. Hawley, Baldwin, Wis.

SATSUMA BUDWOOD from Bearing Trees. Hills Fruit Farm, Panama City, Fla.

SEED—Rough lemon, sour orange, cleopatra. New crop from type true parent trees. Also thrifty seedlings. DeSoto Nurseries, De Soto City, Florida.

Shipping Departments

For Sale—One used "Marsh" Stencil Cutting Machine; cuts half-inch letters. Also have ink pot, brush and liberal supply of blank stencils. Machine guaranteed in best of condition and to operate in every way comparable with a new machine.

Price, complete with accessories as listed, f.o.b. Tampa, \$50.

THE DURO CO.
1219 Florida Ave., Tampa, Fla.